

For the competent person

Installation and maintenance instructions



ecoTEC plus

VU 80, 100, 120 kW

GB, IE

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1 Notes on the documentation

The following information is intended to help you throughout the entire documentation. Other documents apply in addition to these Installation instructions. We accept no liability for any damage caused by failure to observe these instructions.

Other applicable documents

- During installation, you must observe all the installation instructions for the assemblies and components of the system.

These installation instructions are enclosed with the various system parts and supplementary components.

- Furthermore, observe all operating instructions enclosed with components of the system.

1.1 Storing documents

- Pass these installation instructions and all other applicable documents and, if necessary, any required tools to the system operator.

The system operator should retain these instructions and tools so that they are available when required.

1.2 Applicability of the instructions

These instructions apply for the following products only:

Unit	Type designation	Article number	Gas Council Number
ecoTEC plus	806 (VU GB 806/5-5)	0010010767	41-044-68
ecoTEC plus	1006 (VU GB 1006/5-5)	0010010780	41-044-69
ecoTEC plus	1206 (VU GB 1206/5-5)	0010010791	41-044-70

1.1 Type overview

- The article number of the unit can be found on the identification plate.

1.3 Identification plate

The identification plate of the Vaillant ecoTEC plus is attached to the bottom of the boiler at the factory.

The article number of the gas-fired wall-hung boiler can be found in the serial number. The seventh to sixteenth numbers constitute the article number.

The serial number is also located on a plate, which is placed in a plastic fish plate behind the front flap on the underside of the boiler. The serial number can also be shown in the display of the boiler (→ **Operating instructions**).

1.4 CE label



CE labelling shows that, based on the type overview, the units comply with the basic requirements of the following directives:

- Directive 2009/142/EC of the Council with amendments "Directive for Harmonisation of Legal Regulations of the Member States for Gas Consumption Appliances" (Gas Appliances Directive)
- Directive 92/42/EC of the Council with amendments "Directive Concerning the Efficiency of New Hot Water Heating Boilers Fired by Liquid or Gaseous Fuels" (Efficiency directive)
- Directive 2006/95/EC of the Council with amendments "Directive Concerning Electrical Equipment for Use Within Specific Voltage Limits" (Low voltage directive)
- Directive 2004/108/EC of the Council with amendments "Directive Concerning Electromagnetic Compatibility"

The boilers comply with the type sample described in the EC Type testing certificate
PIN no. CE-0085CM0415

The units comply with the following standards:

- EN 12828
- EN 15417
- EN 15420
- EN 50165
- EN 55014
- EN 60335-1
- EN 6100-3-2
- EN 6100-3-3
- prEN 15502-1
- prEN 15502-2

1 Notes on the documentation

1.5 Type overview

Unit type ecoTEC plus	Designated country (designation in accordance with ISO 3166)	Approval category	Gas group	Nominal heat output range [kW]
806 (VU GB 806/5-5)	GB (Great Britain) IE (Ireland)	II _{2H3P}	Natural gas H - G20 - 2 kPa (20 mbar) Propane - G31 - 3.7 kPa (37 mbar) Propane - G31 - 5 kPa (50 mbar)	16 - 80
1006 (VU GB 1006/5-5)	GB (Great Britain) IE (Ireland)	II _{2H3P}	Natural gas H - G20 - 2 kPa (20 mbar) Propane - G31 - 3.7 kPa (37 mbar) Propane - G31 - 5 kPa (50 mbar)	20 - 100
1206 (VU GB 1206/5-5)	GB (Great Britain) IE (Ireland)	II _{2H3P}	Natural gas H - G20 - 2 kPa (20 mbar) Propane - G31 - 3.7 kPa (37 mbar) Propane - G31 - 5 kPa (50 mbar)	24 - 120

1.2 Type overview





2 Safety

2.1 Safety and warning information

- When installing the ecoTEC plus, you must observe all the general safety information and the warning notes that appear before all of the actions.

2.1.1 Classification of warnings


The warnings are classified in accordance with the severity of the possible danger using the following warning signs and signal words:

Warning symbol	Signal word	Explanation
	Danger!	Imminent danger to life or risk of severe personal injury
	Danger!	Risk of death from electric shock
	Warning.	Risk of minor personal injury
	Caution.	Risk of material or environmental damage

2.1 Classification of warnings

2.1.2 Structure of warnings

Warning signs are identified by an upper and lower separating line, and are laid out according to the following basic principle:

	Signal word! Type and source of danger! Explanation of the type and source of danger ➤ Measures for averting the danger
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2.2 Intended use

There is a risk of injury or death to the user or others, or of damage to the product and other property, in the event of improper use or use for which it is not intended.

The product is intended as a heat generator for closed hot water/central heating installations and for hot water generation. The products referred to in this manual must only be installed and operated in conjunction with the accessories listed in the associated flue pipe installation manual.

Intended use includes the following:

- observance of accompanying operating, installation and servicing instructions for the Vaillant product, as well as all other components of the system
- installing and fitting the product in accordance with the product and system approval
- compliance with all inspection and maintenance conditions listed in the instructions.

The use of the product in vehicles, such as mobile homes and caravans, is not classed as intended use. Units that are not classed as vehicles are those that are installed in a fixed and permanent location (known as "fixed installation").

Installing and using the product in locations where it will be subject to possible moisture or spray water is considered to be improper use.

Any other use that is not specified in these instructions, or use beyond that specified in this document, shall be considered improper use. Any direct commercial or industrial use is also deemed to be improper.

The manufacturer/supplier is not liable for any claims or damage resulting from improper use. The user alone bears the risk.

Caution.

Improper use of any kind is prohibited.



2 Safety



2.3 Basic safety information

- Observe the following safety information at all times.

European installation directive

Installation and maintenance of the boiler must only be performed by a competent person with valid accreditation from the Health and Safety Executive in accordance with the "Gas Safety (Installation and Use) Regulations 1998" (hereinafter abbreviated to "competent person" or "heating specialist company"). The existing regulations, rules and guidelines must be observed when doing so. The competent person is also responsible for inspection, maintenance and repairs to the boiler, and alterations to the gas volume setting.

IE only: The installation must comply with the current Version of I.S.813 'Domestic Gas Installations' and current Building Regulations.

The current ETCI Regulations for installing electrical systems must also be observed.

Risk of poisoning and burns caused by escaping hot flue gases!

Hot flue gas can escape and cause poisoning and burns if the boiler is operated with an incompletely installed or flue pipe or if the boiler is operated with internal leaks with the front casing open.

- Operate the boiler for start-up and in continuous mode only when the front casing is fitted and closed and the flue pipe is completely fitted.
- For test purposes only (such as gas flow pressure testing), the boiler may be operated with the front casing removed for short durations ONLY but must have a completely installed flue pipe.

What to do in an emergency if you smell gas

Installation errors, damage, tampering, unauthorised installation sites or similar can cause gas to escape and result in a risk of poisoning and explosion. If there is a smell of gas in the building, proceed as follows:

- Avoid rooms that smell of gas.
- If possible, open doors and windows fully and ensure adequate ventilation.
- Do not use naked flames (e.g. lighters, matches).
- Do not smoke.
- Do not use any electrical switches, mains plugs, doorbells, telephones or other communication systems in the building.
- Close the gas meter isolator device or the main isolator.
- If possible, close the gas isolator cock in the gas supply.
- Warn other occupants in the building by yelling or banging on doors or walls.
- Leave the building.
- If you can actually hear gas leaking, leave the building immediately and ensure that others do not enter the building.
- Alert the fire brigade and police when you are outside the building.

- Notify the gas supply company or National Grid Transco 0800 111999 by telephone from outside the building!

What to do if you smell flue gas

Installation errors, damage, tampering with the unit, unauthorised installation sites or similar can cause flue gas to escape and result in a risk of poisoning. If there is a smell of flue gas in the building, proceed as follows:

- If possible, open doors and windows fully and ensure adequate ventilation.
- Switch the boiler off.
- Check the flue gas routes in the boiler and the flue gas pipes.
- In particular, check that the flue gas opening is not blocked. If required, seek expert assistance for this.

Installation in rooms with ventilation

For open-flued operation, the unit must not be placed in rooms from which the air is extracted using fans (for example, ventilation systems, extractor hoods, tumble dryer ventilation). These systems create negative pressure in the room. As a result of the negative pressure, flue gas from the opening is drawn through the annular gap between the flue gas pipe and the shaft into the installation room.

The unit may only be operated dependent on the room air, if simultaneous operation of the unit and fan is not possible.

- To interlock the fan and unit, install the Vaillant accessory multi-functional module 2 from 7.
- Please inform the system operator of the possible risk from running exhaust fans.

Material damage caused by corrosion

To prevent corrosion on the boiler and also in the flue pipe, note the following:

- Do not use sprays, solvents, chlorinated cleaning agents, paint, adhesives or similar substances in the vicinity of the boiler.

Under unfavourable circumstances, these substances may cause corrosion.

Material damage due to improper use and/or unsuitable tools

The use of unsuitable tools or improper use thereof may cause damage, such as gas or water leaks.

- To tighten or loosen threaded connections, only use a suitable open-ended spanner (combination wrench) - do not use pipe wrenches, extensions, etc.

Changes to the surroundings of the boiler

Changes may not be made to the following equipment:

- the boiler
- the gas, air and water pipes and power lines
- the flue pipe
- the drain line and expansion relief valve for the heating water
- constructional conditions that could affect the operational safety of the boiler



Using the correct gas type

Using the wrong gas type may cause a fault shutdown on the boiler. Furthermore, ignition and combustion noise may occur in the boiler.

- Observe the gas setting values in accordance with
→ **section 1.5.**

Risk of death due to lack of safety devices

A lack of safety devices (e.g. expansion relief valve, expansion vessel) can lead to potentially fatal scalding and other injuries, e.g. due to explosions.

The schematic drawings included in this document do not show all safety devices required for correct installation.

- Install the necessary safety devices in the system.
- Inform the operator about the function and position of the safety devices.
- Observe the applicable national and international laws, standards and guidelines.

2.4 General requirements

2.4.1 Related documents

To ensure the safe installation and continued satisfactory operation of your appliance, all works shall be carried out by a competent installer fully conversant with the required current and up to date, acts standards, laws and regulations relevant for this range of equipment at the time of installation. In addition any special requirements of Local Authorities, gas undertakings or insurers must be complied with. Installers shall carry out a full site risk assessment and put into place all necessary steps and procedures to comply with Health and Safety at Work Act and ensure safety of themselves and others with regard to manual handling and working at height requirements.

Attention shall be paid to (but not restricted to) the following:

- Gas Safety (Installation and Use) regulations.
- Non Domestic Heating, Cooling and Ventilation Compliance Guide.
- All Building Regulations 2000 for England and Wales, (as amended).
- (Includes Approved Codes of Practice and Approved Documents for building regulations e.g. L1, L2A, L2B, L8.)
- The Building Standards, Scotland, and any requirements determined by the local authorities within.
- BS 7671 Requirements for electrical installations. IEE Wiring Regulations
- The Electricity at Work Regulations.
- The Clean Air Act 1993, 1968 and the 3rd Edition of the 1956 Clean Air Act. (installations exceeding 150kW)
- The Water supply (water fittings) regulations 1999.
- BS 5854 Code of practice for flues and flue structures in buildings.
- BS EN 12828 Design of water-based heating systems.

- BS 6644 Specification for the installation of gas fired hot water boilers with rated inputs between 70 kW (net) and 1.8 MW (net) (2nd and 3rd family gases).
- I.S. 820 Non Domestic gas Installations (Ireland)
- BS 6700 Specification for the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.
- BS 6880 Code of practice for low temperature heating systems with outputs greater than 45 kW.

Part 1 Fundamental and design considerations.

Part 2 Selection of equipment.

Part 3 Installation, commissioning and maintenance.

- BS 6981 Installation of low pressure gas pipework of up to 35mm in domestic premises.
- BS 4814 Specification for: Expansion vessels using an internal diaphragm, for sealed hot water and heating systems.
- BS 7074 Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems.

Part 1 Code of practice for domestic heating and hot water.

Part 2 Code of practice for low and medium temperature hot water systems.

- BS 7593 Code of practice for treatment of water in domestic hot water central heating systems
- BS EN 13831 Closed expansion vessels with built in diaphragm
- BS EN 14336 Heating systems in buildings. Installation and commissioning of water based heating systems.

Institute of Gas Engineers Publications:

- IGE/UP/1 (Edition 2) Strength testing, tightness testing and direct purging of industrial and commercial gas installations.
- IGE/UP/1A (Edition 2) Strength testing, tightness testing and direct purging of small, low pressure industrial and commercial natural gas installations.
- IGE/UP/1B (Edition 2) Tightness testing and direct purging of small natural gas installations.
- IGE/UP/ 7 (Edition 2) Gas in timber and light steel framed buildings.
- IGE/UP/10 Installation of gas appliances in industrial and commercial premises.

Part 1 Flued appliances.



2 Safety



2.4.2 Installation site

The installation site of the boiler should allow proper connection of the flue pipe to the boiler. In addition, there should be adequate room for maintenance work and air circulation around the boiler.

The boiler must be set up in a separate installation room. In case of installation of the boiler in an unusual location, special procedures may be necessary and BS 5546 and BS 6798 give detailed instructions on this aspect. The boiler must be installed on a flat, vertical wall, which must be sufficiently robust to take the weight of the boiler. The boiler may be installed on a combustible wall, subject to the requirements of the Local Authorities and Building Regulations.



If the boiler is to be installed in a timber frame house, the installation must be performed in accordance with the Institute of Gas Engineers Publication IG/UP/7 edition 2 "Guideline for gas installations in wooden and light metal-clad residences".



Caution. **Risk of damage caused by aggressive vapours and dust.**

Aggressive vapours and dust in the installation room may cause corrosion damage to the boiler and to the flue gas installation.

- Ensure that the boiler is room-sealed if the air in the installation room contains aggressive vapours or dust.

- Observe the following when choosing the installation site and operating the boiler:
 - Do not install the boiler in rooms prone to frost.
 - Do not install the boiler in rooms in which the combustion air contains chemical substances, e.g. fluoride, chlorine, sulphur, dust, etc. (e.g. sprays, solvents, cleaning agents, paint, adhesives).
- Operate the boiler independently of room air or in a separate installation room, otherwise this may cause corrosion in the boiler and in the flue gas installation, if
 - the combustion air supply contains the aforementioned substances,
 - you install the boiler in hairdresser salons, painter's or joiner's workshops, cleaning businesses or similar.
- Do not route the combustion air through an old oil furnace hearth, as this can also cause corrosion.
- When installing the unit, please observe the local condensate regulations,
 - avoid horizontal sections in the condensate and flue gas route.

The condensate connection must not be modified or blocked.

2.4.3 Gas supply

An existing gas meter should be checked to ensure that it is capable of passing the rate of gas supply required.

The lines must be fitted in accordance with BS 6891. In IE in accordance with the current issue of IS 813. The lines between the gas meter and boiler must be of an appropriate size.

Do not use any lines that are smaller than the connection to the boiler (25 mm). The complete system must be tested for leaks and purged as described in BS 6891.

2.4.4 Electrical connection



Danger! **Risk of death from electric shock!**

If the boiler is not earthed, it may be electrically live if a defect occurs.

- Earth the boiler and the metal pipes that are connected to the boiler.

A common, single-phase 230 V-, ~50 Hz electricity supply fused to a max. 3 A must be provided for the boiler and its additional controllers in accordance with the latest edition of the directive BS7671 (IEE Wiring Regulations) and any other local regulations that may apply. In IE reference should be made to the current edition of the ETCI rules. The method of connection to the power mains must provide a means of completely isolating the boiler and its ancillary controllers from the power mains. It is preferable to isolate the boiler using a two-pin switch with a 3-mm contact opening on both pins. The isolator should be attached and marked accordingly so that it is easily accessible and adjacent to the boiler.

2.4.5 System of parts through which water flows

Lines which do not form part of the usable heating surface should be insulated to prevent heat losses and possible freezing up, especially where the lines run under roofs and ventilated cellar spaces. The drain connections must be easily accessible, so that the entire system including the boiler and hot water system can be drained. The drain connections should be at least 1/2" (BSP nominal size) and must be in accordance with BS 2879.

The water pipes must be thoroughly cleaned, especially when connecting a new boiler to an existing system.

**Caution.****Risk of material damage if the heating water is treated with unsuitable frost or corrosion protection agents!**

Frost and corrosion protection agents may cause changes in the seals, noises during heating and may lead to further damage.

- Do not use any unsuitable frost or corrosion protection agents.

Mixing additives with the heating water may result in material damage. However, no incompatibility with Vaillant boilers has been detected with proper use of the following products over a long period.

- When using additives, follow the manufacturer's instructions without exception.

Vaillant accepts no liability for the compatibility of any additive or its effectiveness in the rest of the heating installation.

Additives for cleaning measures (subsequent flushing required)

- Fernox F3
- Sentinel X 300
- Sentinel X 400

Additives intended to remain permanently in the system

- Fernox F1
- Fernox F2
- Sentinel X 100
- Sentinel X 200

Additives for frost protection intended to remain permanently in the system

- Fernox Antifreeze Alphi 11
- Sentinel X 500

- Inform the operator about the measures required if you have used these additives.
- Inform the operator about the measures required for frost protection.

Permissible salt content

Heating water characteristics	Unit	Low-salt	Saline
Electrical conductivity at 25 °C	µS/cm	< 100	100 - 1500
Appearance		Free of sedimentary materials	
pH value at 25 °C		8.2 - 10.0 ¹⁾	8.2 - 10.0 ¹⁾
Oxygen	mg/l	< 0.1	< 0.02

1) For aluminium and aluminium alloys, the pH value range is restricted from 6.5 to 8.5.

2.2 Guideline values for heating water: Salt content**Permissible water hardness****Caution.****Heating water that is extremely calciferous or corrosive or contaminated by chemicals may cause damage to the boiler.**

Unsuitable heating water damages the seals and diaphragms, blocks components in the boiler and heating installation through which the water flows, and causes noise.

The heating water must fulfil the limit values based on the system volume in accordance with **fig. 2.1** and, if required, must be treated.

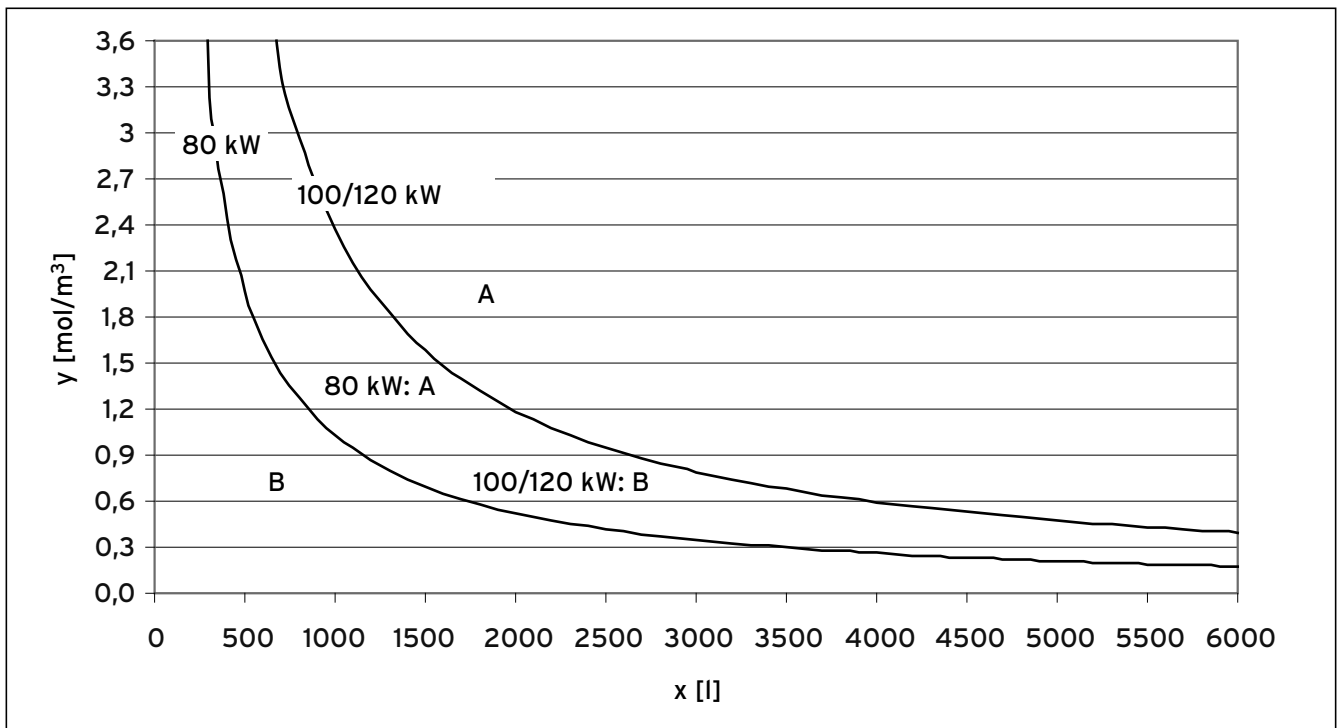
In addition, the national regulations with regard to water treatment shall apply.

To treat the water, we recommend treatment plants that work according to the reverse osmosis process.

- Condition the water for the initial filling as well as the water for any subsequent fillings.



2 Safety



2.1 Water preparation depending on water hardness and system volume

Key:

- x** System volume [l]
- y** Water hardness [mol/m³]
(1 mol/m³ corresponds to 100 mg/l CaCO₃)
- A** Water treatment required
- B** Water treatment not required

2.4.6 Expansion relief valve

The boiler is supplied with a 6 bar pressure relief valve, which must be fitted to the boiler and drained to a safe but visible location. The safety discharge pipe must be a minimum of 18 mm diameter and must be solely used for this purpose.

Ensure that all components that are fitted in the heating installation are suitable for a max. operating pressure of 6 bar.

2.4.7 Purging

The boiler is equipped with an automatic air vent. Other measures need to be taken to allow the heating system to be purged during filling and during commissioning either manually or using an automatic air vent.

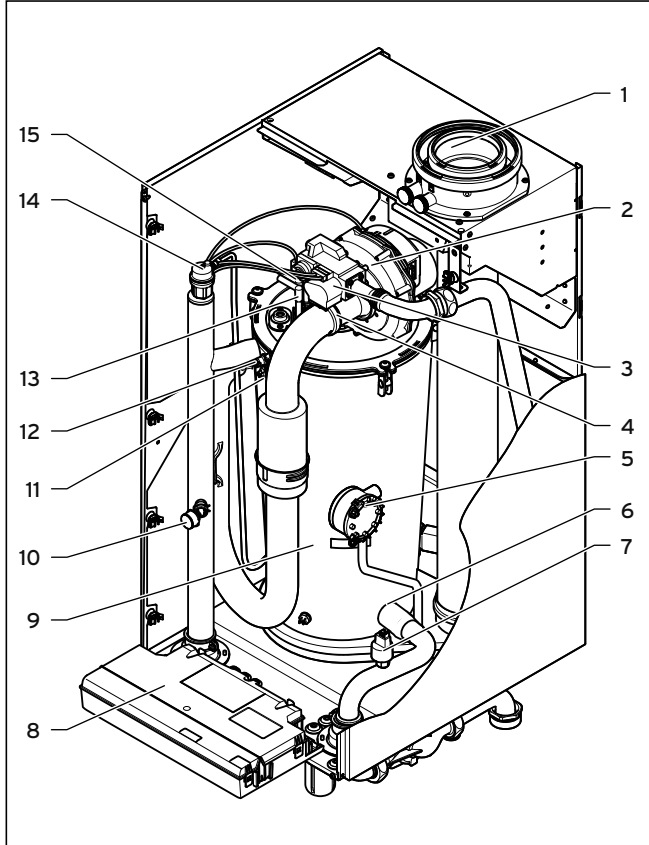
Risk of damage due to frost

Insufficient frost protection measures may cause frost damage to the heating installation

- Explain to the operator how to protect the heating installation against frost.

3 Unit and functional description

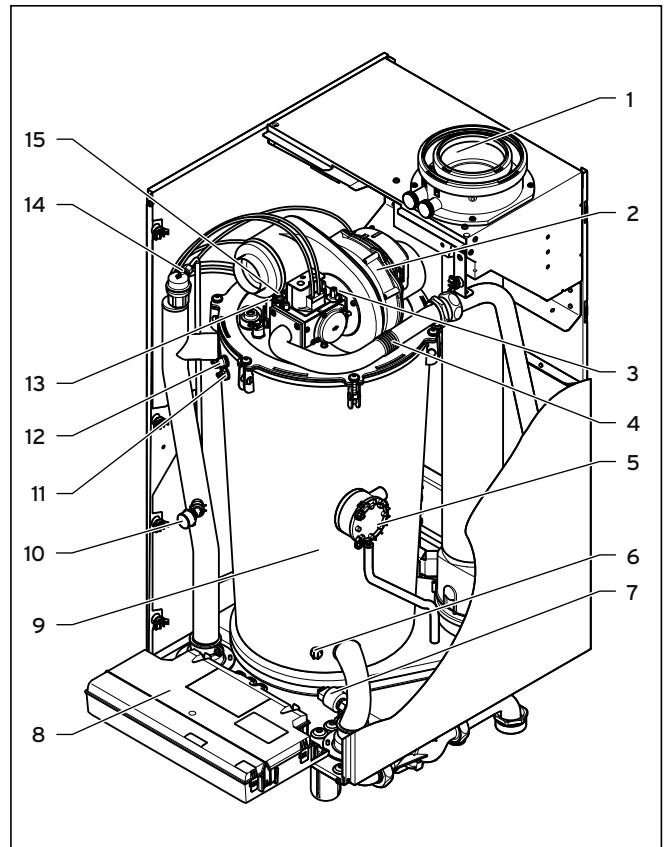
Construction and function



3.1 Functional elements (VU GB 806/5 - 5)

Key

- 1 Connection for the flue pipe
- 2 Fan
- 3 Gas valve
- 4 Connection for air intake pipe
- 5 Flue gas pressure cartridge
- 6 Return sensor
- 7 Water pressure sensor
- 8 Electronics box
- 9 Stainless steel heat exchanger
- 10 Pressure gauge
- 11 Flow sensor
- 12 Safety cut-out
- 13 Ignition electrode
- 14 Automatic air vent
- 15 Monitoring electrode



3.2 Functional elements (VU GB 1006/5 - 5 and VU GB 1206/5 - 5)

Key

- 1 Connection for the flue pipe
- 2 Fan
- 3 Gas valve
- 4 Supply air collector
- 5 Flue gas pressure cartridge
- 6 Return sensor
- 7 Water pressure sensor
- 8 Electronics box
- 9 Stainless steel heat exchanger
- 10 Feed sensor
- 11 Safety cut-out
- 12 Ignition electrode
- 13 Automatic air vent
- 14 Monitoring electrode

4 Installation

4 Installation

4.1 Scope of delivery

The Vaillant ecoTEC plus is delivered pre-assembled in a packaging unit.

4.1.1 Unpacking the boiler

- Open the box by pulling on the tear-off strings.
- Remove the boiler from its box.
- Remove the protective film from all parts of the boiler.
- Place the boiler so that it is vertical on the foot pad.

4.1.2 Checking the scope of delivery

- Check that the scope of delivery is complete and intact (→ table 4.1).

Number	Description
1	Hanging bracket
1	Unit
1	Enclosed documentation <ul style="list-style-type: none">- Installation and maintenance instructions- Operating instructions- Flue pipe installation manual- Installation template- Guarantee card- Various stickers
1	Condensate siphon
1	Bag containing small parts (assembly kit) <ul style="list-style-type: none">- 1 x expansion relief valve, 6 bar- 2 x service valves- 6 x wood screws- 6 x rawl plug, 10 x 60 mm- 6 x washers

4.1 Scope of delivery

4.1.3 Disposing of the packaging

- Dispose of the cardboard packaging used on the ecoTEC plus at a recovered paper collection point.
- Dispose of the plastic film and plastic filling at an appropriate plastic recycling site.
- Observe valid national regulations.

4.2 Transporting the unit

Important:

In regard to the regulations of 1992 concerning the manual handling of loads, the unit exceeds the weight which can be lifted by a single person.

General handling recommendations

- Clear your path before lifting the unit.
- Use safe lifting techniques - keep your back straight - and bend your legs at the knee.
- Hold the load as close as possible to your body. Do not twist your body - instead, reposition your feet.
- If the unit is being lifted by 2 persons, ensure your movements are coordinated during lifting.
- Avoid bending your upper body - do not lean forwards or to the side.
- Wear appropriate cut resistant and non-slip gloves to protect yourself against sharp edges and maintain a safe and secure grip.
- If required, get somebody to assist you in this.

Unloading the box from the delivery van

It is recommended that two people lift the unit together.

- Lift the box using the straps provided.
- Use safe lifting techniques - keep your back straight - and bend your legs at the knee.
- Hold the load as close as possible to your body.
- If the unit is being lifted by 2 persons, ensure your movements are coordinated during lifting.
- If required, get somebody to assist you in this.

Transporting the box from the delivery point to the installation site - ground floor

It is recommended that two people lift the unit together.

- Use safe lifting techniques - keep your back straight - and bend your legs at the knee.
- Hold the load as close as possible to your body.
- If the unit is being lifted by 2 persons, ensure your movements are coordinated during lifting.
- Clear your path before lifting the unit.
- Use safe lifting techniques - keep your back straight - and bend your legs at the knee.
- Do not twist your body - instead, reposition your feet.
- Avoid tripping hazards, slippery or wet surfaces as well as steps and stairs.
- If required, get somebody to assist you in this.

Transporting the box from the delivery point to the installation site - first or higher floor, cellar

It is recommended that two people lift the unit together.

- Use safe lifting techniques - keep your back straight - and bend your legs at the knee.
- Hold the load as close as possible to your body.
- If the unit is being lifted by 2 persons, ensure your movements are coordinated during lifting.
- Avoid bending your upper body - do not lean forwards or to the side.
- Clear your path before lifting the unit.
- Use safe lifting techniques - keep your back straight - and bend your legs at the knee.
- Do not twist your body - instead, reposition your feet.
- Avoid tripping hazards, slippery or wet surfaces as well as steps and stairs.
- If required, get somebody to assist you in this.

Transporting the box from the delivery point to the installation site - roof

- The unit must be lifted by two persons.
- Coordinate your movements.
- Avoid bending your upper body - do not lean forwards or to the side.
- Clear your path before lifting the unit.
- Avoid tripping hazards, slippery or wet surfaces as well as steps and stairs.
- If the unit is being transported to an attic storey, one person must guide the unit from above, while the other supports the unit from below.
- Use safe lifting techniques - keep your back straight - and bend your legs at the knee.
- Hold the load as close as possible to your body.
- If required, get somebody to assist you in this.
- The attic storey must be safely accessible and must have a solid floor and suitable lighting.
- If the attic storey is accessed via a hatch, the hatch must be secured against falling using a suitable guard rail.
- Before setting up the unit, it is recommended that you perform a risk assessment of the attic storey, to clarify access, floor rigidity, lighting and other factors, and any measures to be undertaken in advance.

Unpacking the unit from the box

- It is recommended that two persons lift the unit out of the box.
- Always keep the working area free from obstacles.
- Cut through the two straps.
- Open the box flaps.
- Remove the polystyrene parts from the box
- Separate the box in the centre at the pull-out strap.
- Lift the upper part of the box away.
- Lift the unit out of the box.
- Use safe lifting techniques - keep your back straight - and bend your legs at the knee.
- Hold the load as close as possible to your body.
- If required, get somebody to assist you in this.
- Dispose of the packaging responsibly.

- Wear appropriate cut-resistant and non-slip gloves to protect yourself against sharp edges and maintain a safe and secure grip while handling the unpackaged unit.

Positioning the unit for final installation - no obstacles

- If the unit weighs more than 25 kg, it should always be transported by two persons, where possible.
- Fix the unit bracket securely to the wall before lifting the unit and placing it in position.
- Ensure that you hold on to the front and side of the unit securely, lift it, hold it in a balanced position and then lift it further upwards and position it on the bracket.
- Use safe lifting techniques - keep your back straight - and bend your legs at the knee -if you are lifting something from the floor.
- Do not twist your body - instead, reposition your feet.
- During the entire lifting process, hold the boiler as close as possible to your body to minimise the strain on your back.
- Ensure your movements are coordinated so that the weight of the unit is evenly distributed.
- If required, get somebody to assist you in this.
- Wear appropriate cut-resistant and non-slip gloves to protect yourself against sharp edges and maintain a safe and secure grip while handling the unit.

Positioning the unit for final installation - above a work surface, possible obstacles, etc.

If the unit weighs more than 25 kg, it should always be transported by two persons, where possible.

- Fix the unit bracket securely to the wall before lifting the unit and placing it in position.
- If required, provide the work surface with sufficient protection against damage.
- Ensure that you hold the unit securely at the front and side and lift it - if available - onto the work surface.
- Hold the unit in a balanced position and then lift it further upwards and position it on the bracket.
- If the unit is being positioned on the bracket by two persons, ensure that you have a firm grip on the front and side/bottom of the boiler.
- Ensure your movements are coordinated if the unit is being lifted by 2 persons, so that its weight is evenly distributed.

Use safe lifting techniques - keep your back straight - and bend your legs at the knee -if you are lifting something from the floor.

- Do not twist your body - instead, reposition your feet.
- During the entire lifting process, hold the boiler as close as possible to your body to minimise the strain on your back.
- Avoid bending your upper body - do not lean forwards or to the side.
- If required, get somebody to assist you in this.
- Wear appropriate cut-resistant and non-slip gloves to protect yourself against sharp edges and maintain a safe and secure grip while handling the unit.

4 Installation

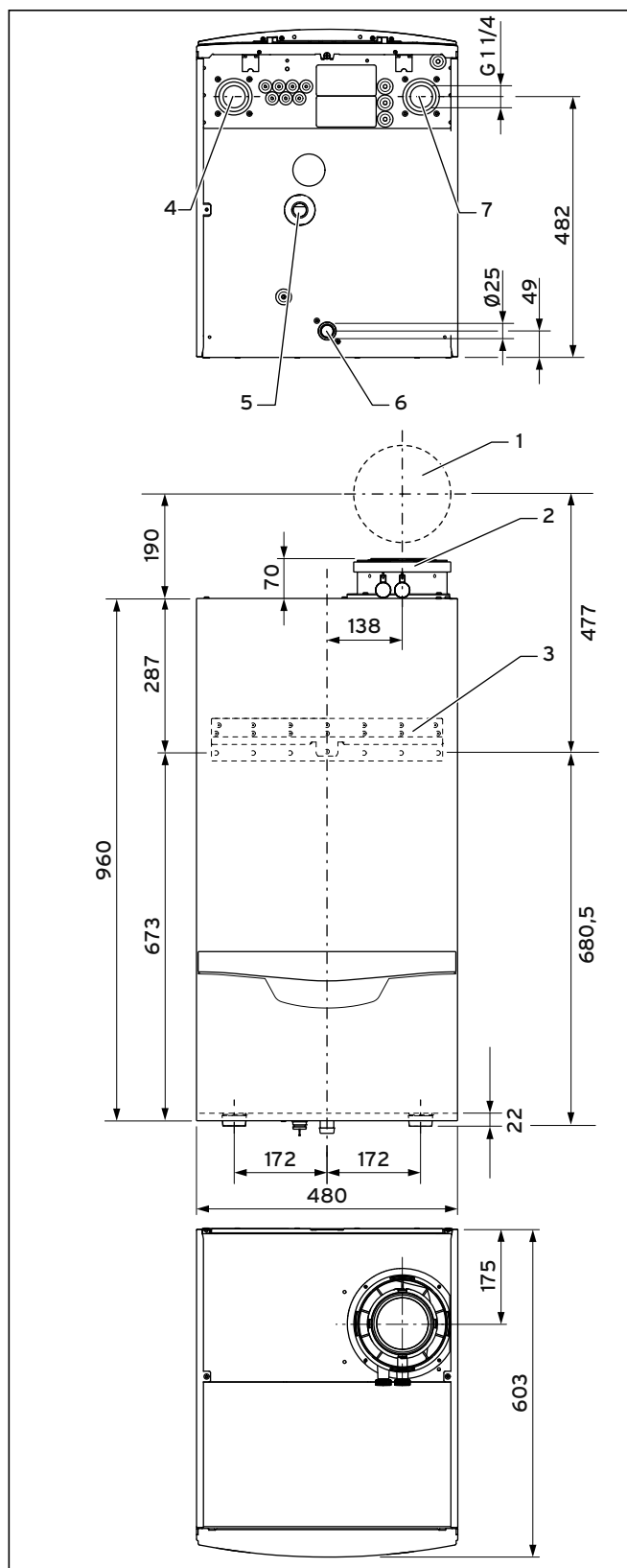
Positioning the unit for final installation - restricted installation

- If the unit weighs more than 25 kg, it should always be transported by two persons, where possible.
- Fix the unit bracket securely to the wall before lifting the unit and placing it in position.
- If required, provide the work surface with sufficient protection against damage.
- Ensure that you hold the unit securely at the front and side and lift it - if available - onto the work surface.
- Hold the unit in a balanced position and then lift it further upwards and position it on the bracket.
- If the unit is being positioned on the bracket by two persons, ensure that you have a firm grip on the front and side/bottom of the boiler.
- Ensure your movements are coordinated if the unit is being lifted by 2 persons, so that its weight is evenly distributed.
- Use safe lifting techniques - keep your back straight - and bend your legs at the knee -if you are lifting something from the floor.
- Do not twist your body - instead, reposition your feet.
- During the entire lifting process, hold the boiler as close as possible to your body to minimise the strain on your back.
- If required, get somebody to assist you in this.
- Wear appropriate cut-resistant and non-slip gloves to protect yourself against sharp edges and maintain a safe and secure grip while handling the unit.

Positioning the unit for final installation - with restricted installation position under the roof.

- If the unit weighs more than 25 kg, it should always be transported by two persons, where possible.
- Ensure that you hold onto the front and side of the unit securely, lift it, hold it in a balanced position and then lift it further upwards and position it on the bracket.
- If the unit is being positioned on the bracket by two persons, ensure that you have a firm grip on the front and side/bottom of the boiler.
- Ensure your movements are coordinated if the unit is being lifted by 2 persons, so that its weight is evenly distributed.
- If the unit is being positioned on the bracket by one person, ensure that you have a firm grip and lift the boiler from the bottom.
- Use safe lifting techniques - keep your back straight - and bend your legs at the knee -if you are lifting something from the floor.
- Do not twist your body - instead, reposition your feet.
- During the entire lifting process, hold the boiler as close as possible to your body to minimise the strain on your back.
- If required, get somebody to assist you in this.
- Wear appropriate cut-resistant and non-slip gloves to protect yourself against sharp edges and maintain a safe and secure grip while handling the unit.
- Before setting up the unit, it is recommended that you perform a risk assessment of the attic storey, in order to check the access, floor rigidity, lighting, and railing, and to take all required remedial actions before the unit is installed.

4.3 Dimension drawing and connection dimensions



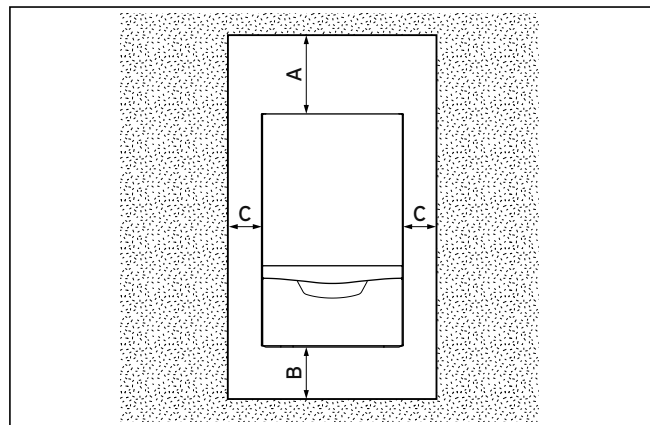
4.1 Connection dimensions in mm

Key

- 1 Wall breakthrough for flue pipe
- 2 Flue pipe connection
- 3 Hanging bracket
- 4 Heating flow
- 5 Condensate siphon connection
- 6 Gas connection
- 7 Heating return

4.4 Requirements for the installation site

4.4.1 Required minimum clearances/installation clearances



4.2 Recommended minimum clearances/installation clearances

Key

- A 350 mm (flue pipe diameter 110/160 mm)
450 mm (with cascade design)
- B 400 mm
- C optional approx. 200 mm

- When using the accessories, observe the minimum clearances/installation clearances.
- Where units are installed in cascade, observe the gradient of the flue pipe (approx. 50 mm/m).



When installing the 110/160 mm flue pipe, observe the minimum clearances in accordance with → fig. 4.1.

A side gap is not required, however you can remove the side panels if there is sufficient space at the side (approx. 200 mm) for maintenance. It is not necessary to ensure sufficient clearance between the boiler and combustible materials or components as the temperature of the boiler will always be less than the maximum permissible temperature of 85 °C due to its nominal heat output.

4 Installation

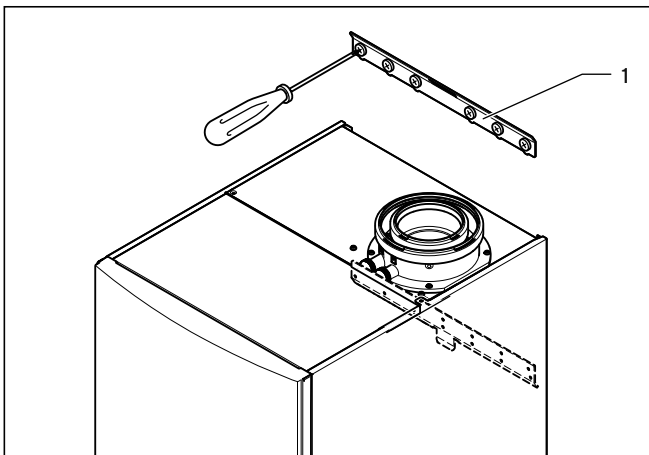
4.5 Wall-mounting the boiler



Danger!
Risk of death if the load-bearing capacity of the fixing elements used is insufficient!

If the fixing elements or wall do not have sufficient load-bearing capacity, the boiler can come loose and fall down. This may also cause leaks in the gas line, which is potentially fatal.

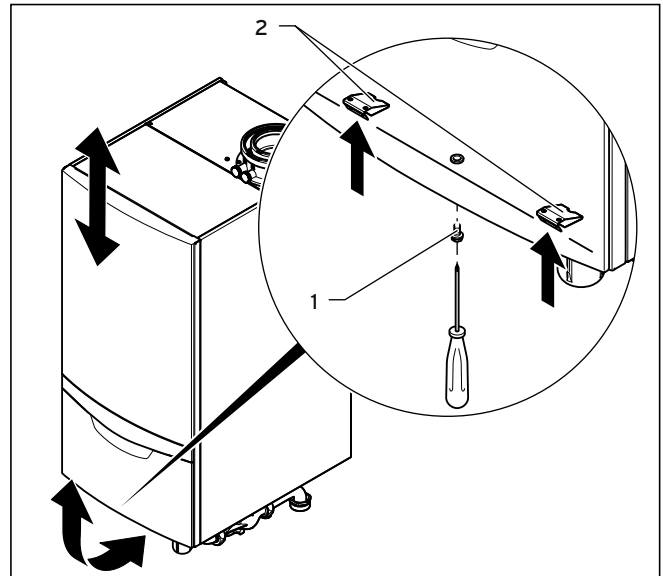
- When installing the boiler, make sure that the fixing elements have a sufficient load-bearing capacity.
- Check if the supplied fixing kit may be used for the wall.
- Check the quality of the wall.
- If required, use individual stands from the cascade programme which is available as an accessory.



4.3 Wall-mounting the boiler

- Fit the hanging bracket (1) to the wall using the rawl plugs and screws provided with the unit.
- Hang the boiler (3) on the hanging bracket from above using the suspension bracket.

4.6 Removing/fitting the front casing



4.4 Removing the front casing

Removing the front casing

- Undo the screw (1)
- Push in both retaining clips (2) so that the front casing is released.
- Pull the front casing forwards at the bottom edge.
- Lift the front casing upwards from the bracket.

Fitting the front casing

- Place the front casing on the upper brackets.
- Push the front casing onto the boiler until the retaining clips (2) on the front casing snap into place. For support, you can also pull the retaining clips (2) downwards at the same time.
- Secure the front casing by tightening the screw (1).

5 Gas installation

The work described in this section must only be carried out by a competent person.

5.1 Preparing for installation



Danger!
Risk of death caused by improper gas installation!

An incorrect gas installation may result in leaks and an explosion.

- During installation, the legal directives and the local regulations for gas supply companies must be observed.



Danger!
Risk of death caused by improper gas installation!

Tension in the gas line may result in leaks or an explosion.

- Make sure there are no stresses in the gas lines when it is installed.



Caution.
Risk of material damage caused by incorrect gas installation.

Excess test pressure may cause damage to the gas valve.

- When checking the gas valve for leak-tightness, use a max. test pressure of 1.1 kPa (110 mbar).
- During the gas installation, ensure that the home pressure regulation for the required gas flow pressure of 5 mbar is maintained in accordance with the technical data (→ section 18).



Caution.
Risk of material damage caused by contaminated lines.

Foreign bodies, such as welding remnants, sealing residue or dirt in the supply lines for gas, may cause damage to the boiler.

- Blow the gas line thoroughly clean prior to installation.



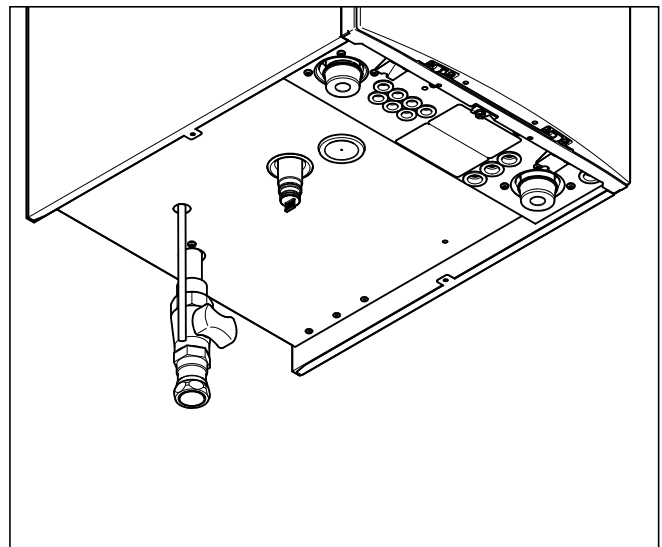
Caution.

Risk of material damage caused by the incorrect gas type.

Using the wrong gas type may cause a fault shutdown on the boiler. Furthermore, ignition and combustion noise may occur in the boiler.

- Only use the gas type specified in the type overview (→ section 1.5).

5.2 Connecting the gas line



5.1 Gas connection

- Fit an approved gas valve to the unit with a screw connector.
- Fit the gas supply line to the gas valve.
- Purge the gas line before you start up the unit.
- Check the gas connection for leak-tightness.

6 Hydraulic installation

The work described in this section must only be carried out by a competent person.

6.1 Preparing for installation



Danger!
Risk of personal injury caused by incorrect installation!

Heating water that leaks from the drain line of the expansion relief valve can cause severe burns.

- Install the expansion relief valve to ensure that there is no danger to other persons.
- Route a discharge pipe with inlet funnel and siphon on the customer side from the discharge line of the expansion relief valve to a suitable drain.
- Make sure that the drain is visible.



Danger!
Risk of scalding and/or damage due to leaking water.

Stresses in the supply line may cause leaks.

- Make sure there is no voltage in the supply lines when they are installed.



Caution.
Risk of damage caused by incorrect installation.

Stresses in the supply line may cause leaks.

- Make sure there is no voltage in the supply lines when they are installed.



Caution.
Risk of damage caused by heat transfer when soldering.

Heat that is transferred during soldering may cause damage to the seals in the service valves.

- Do not solder the connection pieces if the connection pieces are screwed to the service valves.

Any condensate that occurs must only be fed in under consideration of the local regulations regarding neutralisation.



Caution.
Risk of material damage caused by contaminated lines.

Foreign bodies such as welding remnants, sealing residue or dirt in the water pipes may cause damage to the boiler.

- Flush the heating installation thoroughly prior to installation.



Caution.
Risk of damage from corrosion.

If non-diffusion-tight plastic pipes are used in the heating installation, this may cause air to enter the heating water and corrosion of the heat generation circuit and the boiler.

- If using non-diffusion-tight plastic pipes in the heating installation, separate the system by installing an external heat exchanger between the boiler and the heating installation.

The Vaillant ecoTEC boiler should be connected using a Vaillant pump group with modulating pumps (available as an accessory).

This pump group has a connection option for an expansion vessel (right-hand connection) and an expansion relief valve (left-hand connection). You can also purchase these as accessories.

- When installing the pump group, observe the installation sequence for the insulation and the hydraulic pipes (→ pump group installation instructions).
- Note that the boiler pump must always be fitted in the return line. Otherwise, this may lead to a unit fault.

When connecting several units in cascade operation, you must install a non-return flap from the cascade connection set for each individual unit in the unit supply.

A non-return flap from a third-party manufacturer must have no more than 30 mbar pressure losses for a volume flow of 4.5 m³/h.

6.2 Connecting the heating flow and heating return



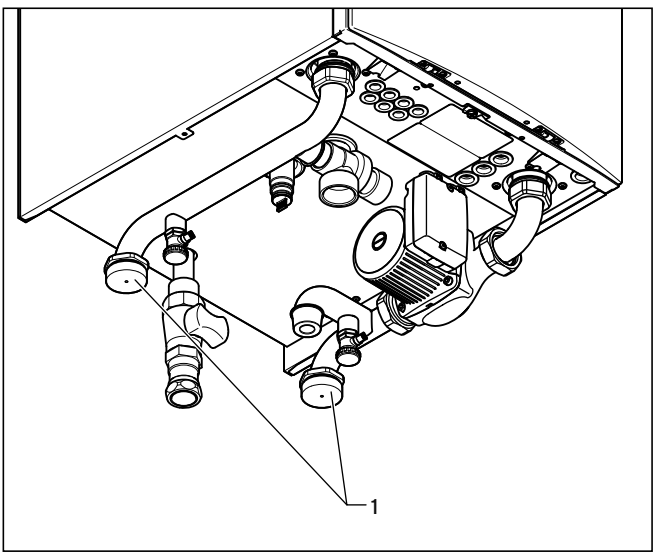
Caution.
Risk of material damage caused by incorrect installation.
Stresses in the supply line may cause leaks.
➤ Make sure there is no voltage in the supply lines when they are installed.



Caution.
Risk of damage to the service valves.
➤ Do not solder the connection pieces if the connection pieces are screwed to the service valves.



Seals made of rubber-like materials may be subject to plastic deformation, which may lead to pressure losses.
We recommend using seals made of a paste-like fibre material.



6.1 Installing the heating flow and heating return

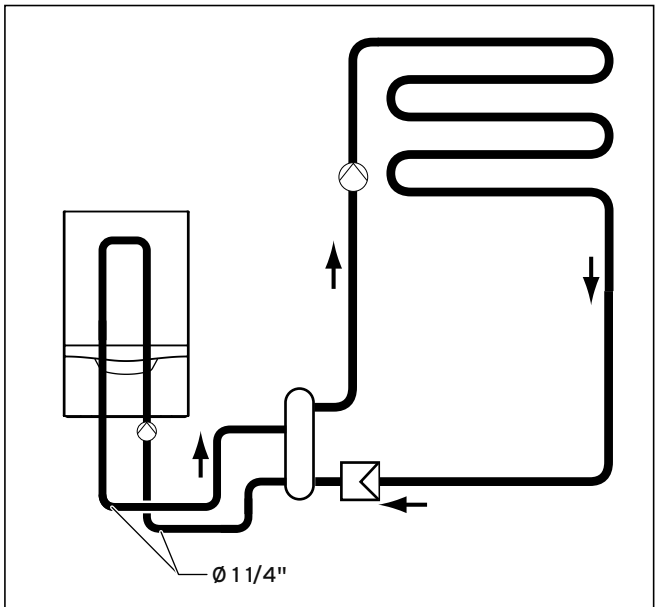
- Insert a flat gasket in each.
- Screw the service valves onto the flow and return connection (1) of the pump group.
- Screw the service valves to the customer's installation. The diameter of the line is 1 1/2".

Hydraulic connection

For connection to the system a hydraulic header has to be used. In difficult cases a plate to plate heat exchanger is recommended. In all instances the system water should be adequately treated.

To this end, various plate heat exchangers are available as accessories, depending on the output of a unit or in cascade connection. The pressure loss is adjusted to the pump group that is offered as an accessory. The minimum volume of circulating water is guaranteed in the unit circuit thanks to the original plate heat exchangers and pump groups, provided the maximum pressure losses are not exceeded in the piping.

To prevent contamination, it is recommended that you install a dirt filter when using plate heat exchangers. This prevents excessive contamination of the heat exchanger. Back-purging devices for cleaning the plate heat exchanger are to be placed on-site.



6.2 Diameter of the supply lines

The following remaining feed heads are available at the unit supply:

Power	Description	Remaining feed head
80 kW	Modulating pump	0.042 MPa (420 mbar)
100 kW	Modulating pump	0.026 MPa (260 mbar)
120 kW	Modulating pump	0.024 MPa (240 mbar)

6.1 Remaining feed head pump group

If you are using a plate heat exchanger to hydraulically separate the system, the following pressure losses must be maintained:

6 Hydraulic installation

Power	Max. pressure loss (mbar)
< 120 kW	86
in conjunction with the hydraulic cascade	
< 240 kW	96
< 360 kW	76
< 480 kW	82
< 600 kW	87
< 720 kW	92

6.2 System separation pressure loss

6.3 Connecting the condensate drain pipework



Danger!

Risk of death from escaping flue gases!

An empty or insufficiently filled condensate siphon may allow flue gases to escape into the room air.

- Make sure that the condensate siphon is filled with water when switching on the boiler.



Danger!

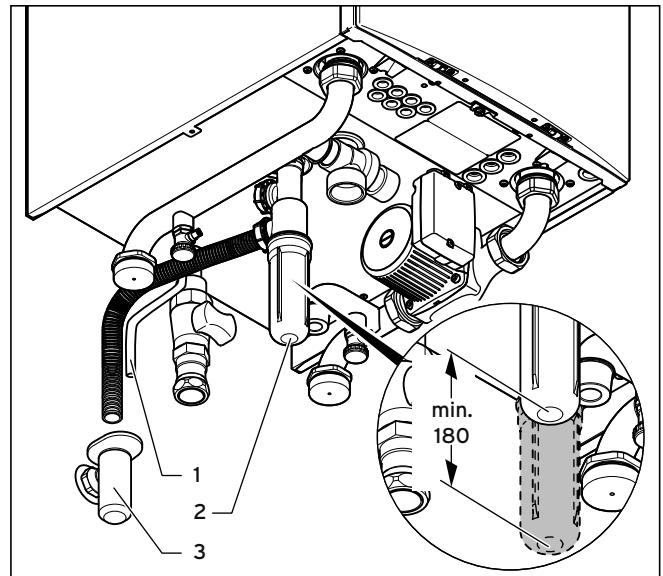
Risk of death from escaping flue gases!

If the condensate drain pipework is connected tightly to a fixed connection on the waste-water piping, the internal condensate siphon can be fully drained until empty.

- Do not connect the condensate drain pipework tightly to the waste-water piping.
- It is recommended that the condensate is drained into a tundish. The condensate drain is totally sealed. It may be possible to empty the trap due to syphonic action causing leakage of combustion products:

Condensate forms in the boiler during combustion. The condensate drain pipework routes the condensate to the waste water connection via a tundish.

The boiler is equipped with a condensate siphon. The filling height is 145 mm. The condensate siphon collects any condensate that occurs and feeds it into the condensate drain pipework.



6.3 Condensate siphon

Install the enclosed condensate siphon as follows:

- Place the condensate siphon on the underside of the boiler on the condensate drain pipe and secure it using the retaining clips.
- Leave an installation space of at least 180 mm beneath the condensate siphon so that you can clean the condensate siphon in the case of service work.
- Check the connection for leaks.
- Check if a neutralising unit is required in accordance with national regulations.

To connect the condensate drain pipework, proceed as follows:

- Hang the condensate drain pipework of the boiler in the pre-installed tundish.
- If required, guide the drain hose (1) of the automatic air vent into the tundish.



The condensate drain pipework connected to the condensate discharge of the boiler must have a downward gradient throughout its entire length (45 mm per metre) and should be installed and connected **within the building** to prevent possible freezing.

- The connections for the condensate drain pipework must not be modified or blocked
- The condensate drain pipework must terminate in a suitable location.

Further information can be obtained from "BS 6798 Specification for installation of gas-fired boilers of rated input not exceeding 70 kW net". Before the boiler is started up, the condensate siphon (1) must be filled with water as described in the relevant section.

6.4 Connecting the discharge pipe to the expansion relief valve on the heating installation

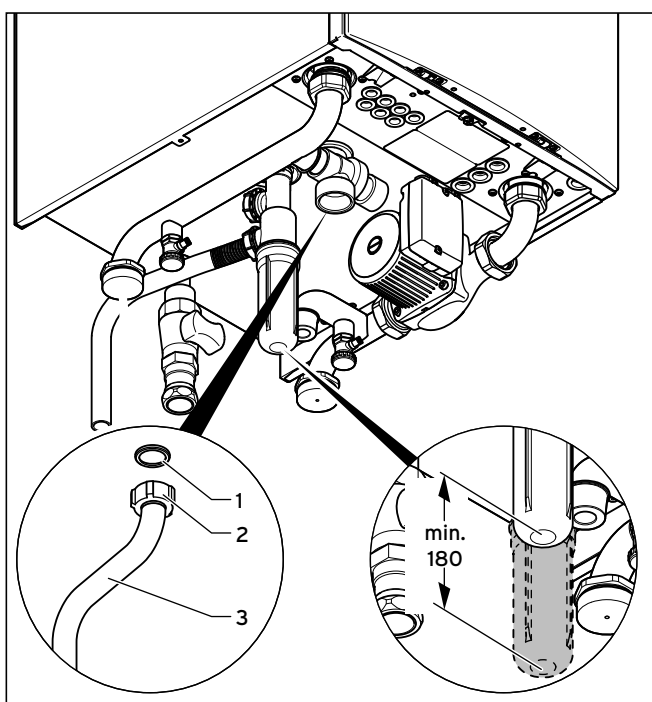
The expansion relief valve for the heating installation can be connected to the pump group (left-hand side)

- Install the drain line for the expansion relief valve so that it is not damaged when removing and fitting the lower part of the condensate siphon.



We do not recommend shortening the discharge pipe that is supplied.

- Leave an installation space of at least 180 mm beneath the condensate siphon.



6.4 Install the discharge pipe on the expansion relief valve

- Insert a seal (1) in the cap nut (2).
- Screw the discharge pipe (3) onto the expansion relief valve.
- Make the drain line routing as short as possible and in a downward gradient away from the boiler.
- Allow the line to terminate in such a way that nobody can be injured and no cable or other electrical components can be damaged if water or steam is ejected.
- Please note that the end of the line must be visible.

7 Flue gas installation

7 Flue gas installation

7.1 Preparing for installation



Danger!
Risk of personal injury and material damage due to unapproved flue pipes.

Vaillant boilers are certified only with genuine Vaillant flue pipes. The use of other accessories may cause personal injury and material damage as well as operating faults.
➤ Only use genuine Vaillant flue pipes.



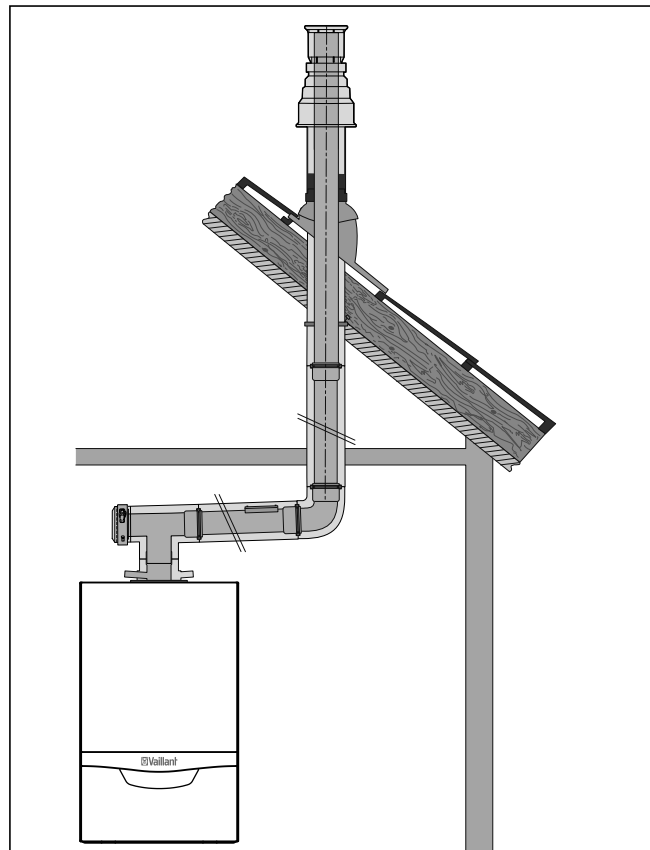
You will find a list of genuine flue pipes in the Vaillant installation instructions for flue pipes.

All ecoTEC plus boilers feature an 110/160 mm diameter air/flue gas connection as standard. Selecting the most suitable system depends on the individual installation and application conditions.

- When installing the flue pipe, observe the provisions of the applicable national regulations.
- Agree the flue pipe with your chimney sweep.
- Lay the flue pipe with a downward gradient so that any escaping condensate can easily flow into the drain (siphon) provided for it without leaving any backwater residues.

7.2 Installing the flue pipe

- Install the flue pipe using the enclosed installation instructions.



7.1 Installation example: Vertical roof duct

7.3 Flue gas guiding opening

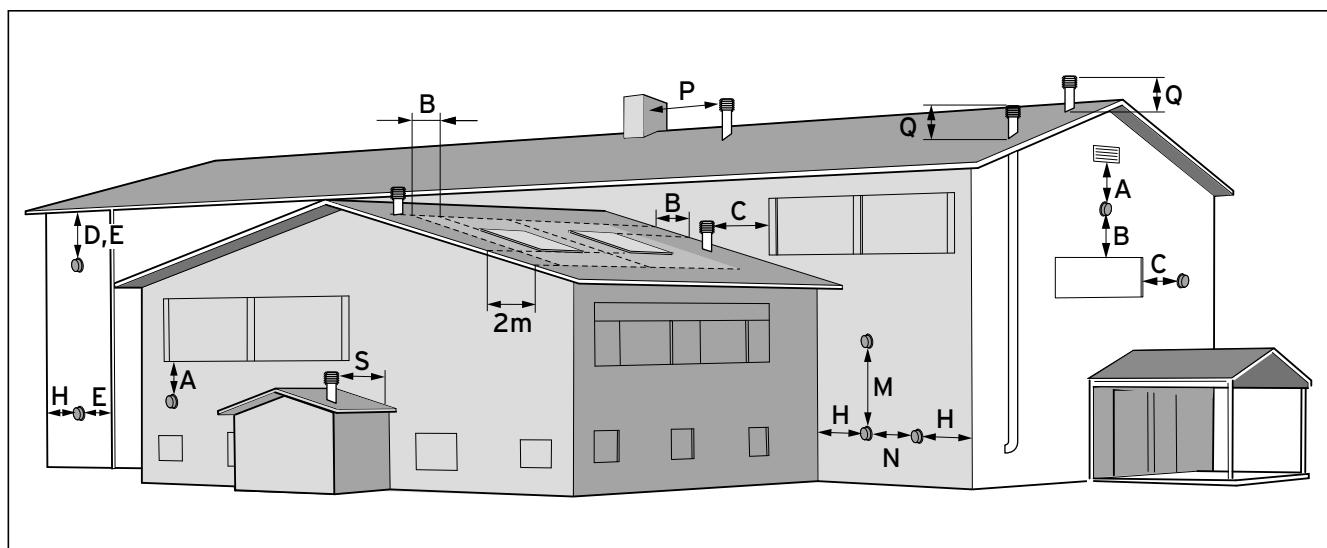
The following information applies to all flue pipe systems.

- a. The terminal must be positioned so that the products of combustion can disperse freely at all times.
- b. Water vapour will sometimes be visible from the terminal of the flue gas system. Fitting locations where this could be a nuisance should be avoided.
- c. If the terminal is installed less than 2 m above a balcony, above ground or above a flat roof to which people have access, a suitable terminal guard must then be provided and fitted (contact Tower Flue Components, Tonbridge, TN9 1TB).



Vertical flues must not terminate within 600 mm of an openable window, air vent or any other ventilation opening.

The flue gas system must be attached or shielded in such a way that ignition (causing fire) or damage to any part of the building is avoided.



7.2 Opening of the flue pipe

Installation site	Minimum dimensions
Horizontal flue gas pipes	
A	Directly below an opening, air bricks, opening windows, etc. 600 mm
B ⁽⁵⁾	Above an opening, air bricks, opening windows, etc. 600 mm
C	Horizontally to an opening, air bricks, opening windows, etc. 600 mm
D	Below temperature-sensitive building components e.g. plastic gutters, down pipes or waste-water pipes 25 mm
E ⁽⁴⁾	Below eaves, adjacent to wastewater pipes 50 mm ⁽¹⁾
F	Below balconies or car port roofs 25 mm
G ⁽⁴⁾	From a vertical wastewater pipes or down pipes 50 mm
H	From internal or external corners 50 mm
H ⁽²⁾	From the edges along to a terminal/outside corner 300 mm
J	Opposite an edge or a terminal 2000 mm
J ⁽²⁾	From a surface facing a terminal 1000 mm
L	From an opening in the car port (e.g. door, window) which leads into the dwelling N/A
M	Vertical from a terminal 1500 mm
N	Horizontal from a terminal 600 mm
Vertical flue gas pipes	
P	From another terminal 600 mm
Q	Above the roof area 600 mm
R ⁽³⁾	From adjacent windows that cannot be opened 1000 mm
S ⁽²⁾	From an adjacent wall to the flue gas pipe 300 mm

7.1 Position of the opening of a fan-assisted flue gas guiding

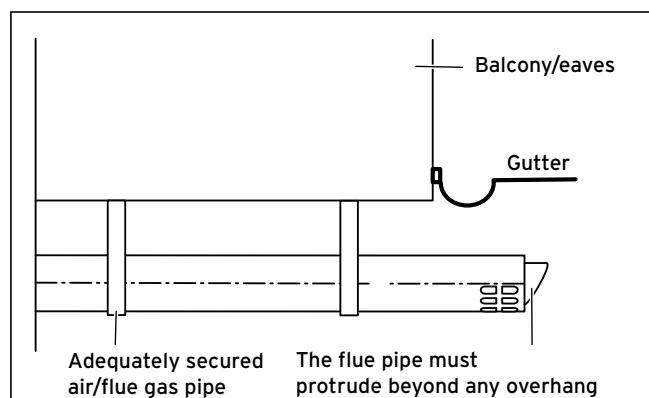
Key:

- ⁽¹⁾ There should be no ventilation/opening in the eaves within 600 mm distance of the terminal.
- ⁽²⁾ These dimensions comply with the building regulations, but they may need to be increased to avoid wall staining and nuisance from plumbing depending on site conditions.
- ⁽³⁾ It is recommended that an elbow termination is fitted to direct the plume away from windows.
- ⁽⁴⁾ If the pipe is shielded from the heat this dimension may be reduced to 25 mm.

- ⁽⁵⁾ The flue through the roof should not be located within the shaded area.
- ⁽⁶⁾ It is recommended that the terminal should not be located below 2 m in any occupied space.

BS 5440-1: It is recommended that the fanned flue terminal should be positioned as follows:

- at least 2 m from an opening in the building directly opposite, and
- so that the products of combustion are not discharged directly across a property boundary.
- Dimensions D, E and F: These clearances may be reduced to 25 mm without affecting the performance of the boiler. In order to ensure that the condensate vapour plume does not damage adjacent surfaces, the terminal should be extended as shown in → fig. 7.3.
- Dimension H: This clearance may be reduced to 25 mm without adversely affecting the performance of the boiler. However, in order to ensure that the condensate vapour plume does not damage adjacent surfaces, a clearance of 300 mm is preferred. For IE, recommendations are given in the current issue of the IS 813.



7.3 Opening of the flue gas system under balconies or eaves

8 Electrical installation

The work described in this section must only be carried out by a competent person.

8.1 Preparing for installation



Danger!

Risk of death from electric shock!

Touching live connections may cause serious personal injury.

- Switch off the power supply.
- Secure the power supply against being switched on again by unauthorised persons while you are working on the boiler.



Danger!

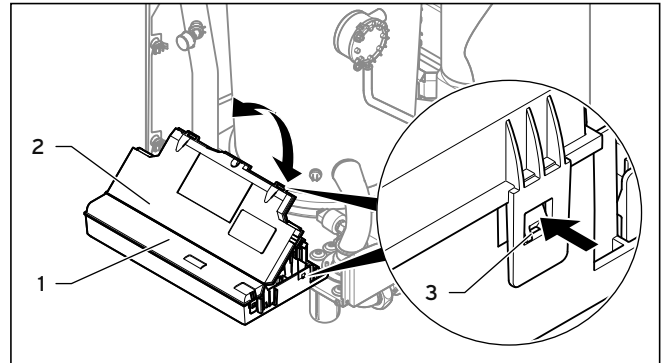
Risk of death from electric shock as a result of an improper electrical connection!

An improper electrical connection may adversely affect the operational safety of the boiler and result in material damage or personal injury.

- The electrical installation must be carried out by a suitably qualified competent person who is responsible for complying with the existing standards and directives.
- Connect the boiler in accordance with BS 7671 (IEE Regulations).
- For IE: Observe the current ETCI regulations (Electro Technical Council for Ireland).
- Earth the boiler.

8.2 Opening/closing the electronics box

- Remove the front casing of the boiler (→ **section 4.6**).



8.1 Opening the back wall of the electronics box

- Tilt the electronics box (1) forwards.
- Loosen the clips (3) from the brackets.
- Tilt the cover (2) upwards.

Closing the electronics box

- Close the cover (2) by pushing downwards on the electronics box (1).
- Ensure that all clips (3) audibly click into the brackets.
- Tilt the electronics box upwards.
- Push the four right and left clips of the box against the side panels on the boiler until you hear them click into place.
- Attach the front casing of the boiler (→ **section 4.6**).

8.3 Establishing the mains connection and connecting the pump group



Danger!

Risk of death from electric shock!

Mains connection terminals L and N remain permanently live even if the boiler on/off button is switched off!

- Before establishing the mains connection, switch off the power supply.



Caution.

Risk of material damage caused by the incorrect supply voltage!

At mains voltages greater than 253 V and less than 190 V, the functions may be impaired.

- Make sure that the rated voltage of the mains is 230 V.



Caution.
Risk of damage caused by incorrect installation.

Mains voltage at the incorrect plug terminals on the ProE system may destroy the electronics.

- Only connect the mains connection cable to the terminals marked for the purpose.
- Use a flexible connection cable.



Caution.
Risk of damage caused by incorrect installation.

Connecting wires that have been stripped too far may cause short circuits and damage the electronics if a strand accidentally comes loose.

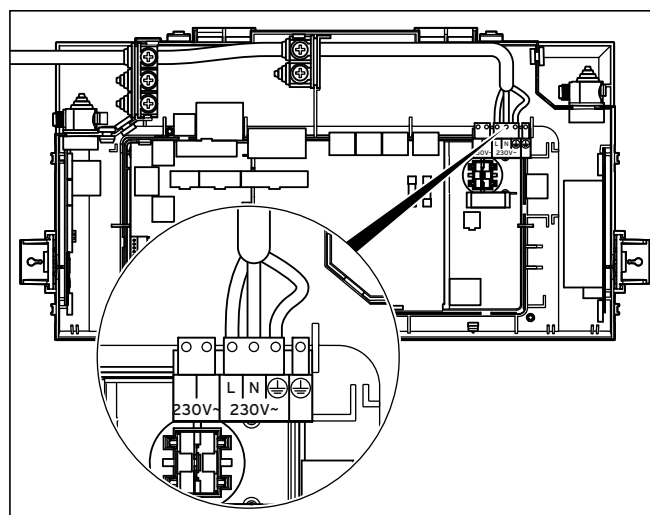
- Only strip the lines a maximum of 3 cm to prevent short circuits.
- Lay the lines correctly.
- Use strain reliefs.

In IE, reference should be made to the current edition of the ETCI (Electro-Technical Council for Ireland) rules.

The boiler is supplied for connection to 230 V, ~ 50 Hz supply fused at 3 A. The connection to the supply network is made using a 3 A fused double-pole isolator with a contact opening of at least 3 mm at all poles. A prerequisite here is that only the boiler and controllers are connected). At the connection point to the mains, it must be possible to completely isolate the boiler and its auxiliary controllers electrically. The connection should be easily accessible and adjacent to the boiler. Use a three-core flexible cable in accordance with BS 6500, tables 6, 8 or 16 (3 x 0.75 to 3 x 1.5 mm²).

The rated voltage of each line in the mains must be 230 V; with mains voltages over 253 V and below 190 V, the unit may not function properly.

- Open the electronics box (→ **section 8.2**).
- Use a flexible, commercial mains connection cable that is compliant with standards.
- Guide the mains connection cable through the cable duct on the left of the base of the unit.
- Use the grommet supplied to seal the cable duct.



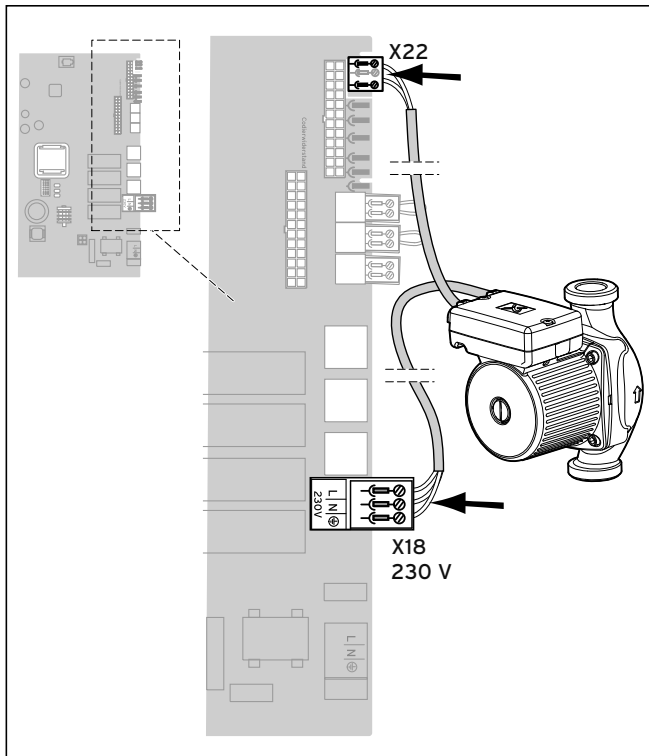
8.2 Cable routing of the mains connection cable

- Insert the mains connection cable into the electronics box.
- Use the strain reliefs provided.
- Shorten the flexible mains connection cable as necessary.
- Strip the flexible mains connection cable by 2-3 cm, but not more than 3 cm.
- Insulate the conductor of the flexible mains connection cable.
- Fit conductor end sleeves on the stripped ends of the conductors.
- Connect the provided green ProE plug for the mains connection to the flexible mains connection cable using a screwdriver.
- Insert the ProE plug into the corresponding PCB slot (L, N and earth) (→ **fig. 8.2**).
- Lay the lines correctly.
- Secure the cable in the electronics box using the strain reliefs.
- Close the electronics box (→ **section 8.2**).



Ensure that the connection cables are securely fastened to the plug terminals.

8 Electrical installation



8.3 Connecting the pump group to the PCB

- Guide the pump cable for the pump group through the cable duct to the right on the underside of the unit.
- Use the strain reliefs provided.
- Connect the power supply network plug of the pump group to the X18 slot on the PCB (→ **fig. 8.3**).
- Connect the control cable of the pump group to the X22 slot on the PCB (→ **fig. 8.3**).
- Lay the lines correctly.
- Secure the lines using the strain reliefs in the electronics box.
- Close the electronics box (→ **section 8.2**).



Ensure that the connection cables are securely fastened to the plug terminals.

8.4 Connecting the controller

8.4.1 Fitting the controller

- Fit the controller in accordance with the respective installation instructions.

8.4.2 Connecting controllers to the electronic system



Caution.
Risk of damage caused by incorrect installation.

Connecting wires that have been stripped too far may cause short circuits and damage the electronics if a strand accidentally comes loose.

- Only strip the lines a maximum of 3 cm to prevent short circuits.
- Lay the lines correctly.
- Use strain reliefs.



Caution.
Risk of material damage caused by incorrect installation.

Mains voltage at the incorrect plug terminals on the ProE system may destroy the electronics.

- Do not connect a mains voltage to the eBUS terminals (+/-).



Make sure that the conductors are securely fastened to the plug terminals of the ProE plug.

- Open the electronics box (→ **section 8.2**).
- Guide the supply lines of the components to be connected (e.g. external controller, external sensor) through the cable duct to the left on the underside of the unit.
- Insert the supply lines into the electronics box.
- Use the strain reliefs provided.
- Shorten the supply lines as necessary.
- Strip the supply lines 2 - 3 cm, but not more than 3 cm.
- Strip the conductor on the supply lines.
- Fit conductor end sleeves on the stripped ends of the conductors.
- Connect the ProE plug to the supply lines of the controller using a screwdriver.
- Insert the ProE plug into the associated PCB slot (→ **fig. 8.4**).
- Lay the lines correctly.
- Secure the cable in the electronics box using the strain reliefs.
- If you do **not** connect a room/timer thermostat to the boiler, bridge the input RT 24 V if no bridge exists.
- If you connect **a** room/timer thermostat to the boiler, remove the bridge at input RT 24 V, if a bridge exists.
- If you connect a weather-controlled compensator or room temperature control system via eBUS, then bridge input RT 24 V, if no bridge exists.
- Close the electronics box (→ **section 8.2**).

- In order to achieve pump operating mode 1 "Comfort" (continuously running pump) for multi-circuit controllers, set the diagnostics code **D.018** Pump operating mode from 3 = "Eco" (intermittent pump) to 1 = "Comfort" (→ **section 12.1.2**).
- If the system partition is installed, set the pump to Comfort (**D.018**) and set the pump output to at least 4 (85 %, **D.014**). The same setting applies for installing units in cascade.



Please note that the bridge at the ProE plug must be removed when connecting a maximum thermostat (contact thermostat) for underfloor heating.

For cascade operation according to the B23p configuration, you must provide a motorised flue non-return flap for each unit and this is actuated by the VR 40 multi-functional module.

The installation instructions for the VR 40 describe how the flue non-return flap is activated.

- For smooth operation in cascade, use the diagnostics code **D.050** to raise the fan speed in partial load operation to 1500 rpm.

8.5 Connecting additional units



Caution. **Risk of damage caused by incorrect installation.**

Connecting wires that have been stripped too far may cause short circuits and damage the electronics if a strand accidentally comes loose.

- Only strip the lines a maximum of 3 cm to prevent short circuits.
- Lay the lines correctly.
- Use strain reliefs.

8.5.1 VR 40 - Connecting the "2 from 7" multi-functional module

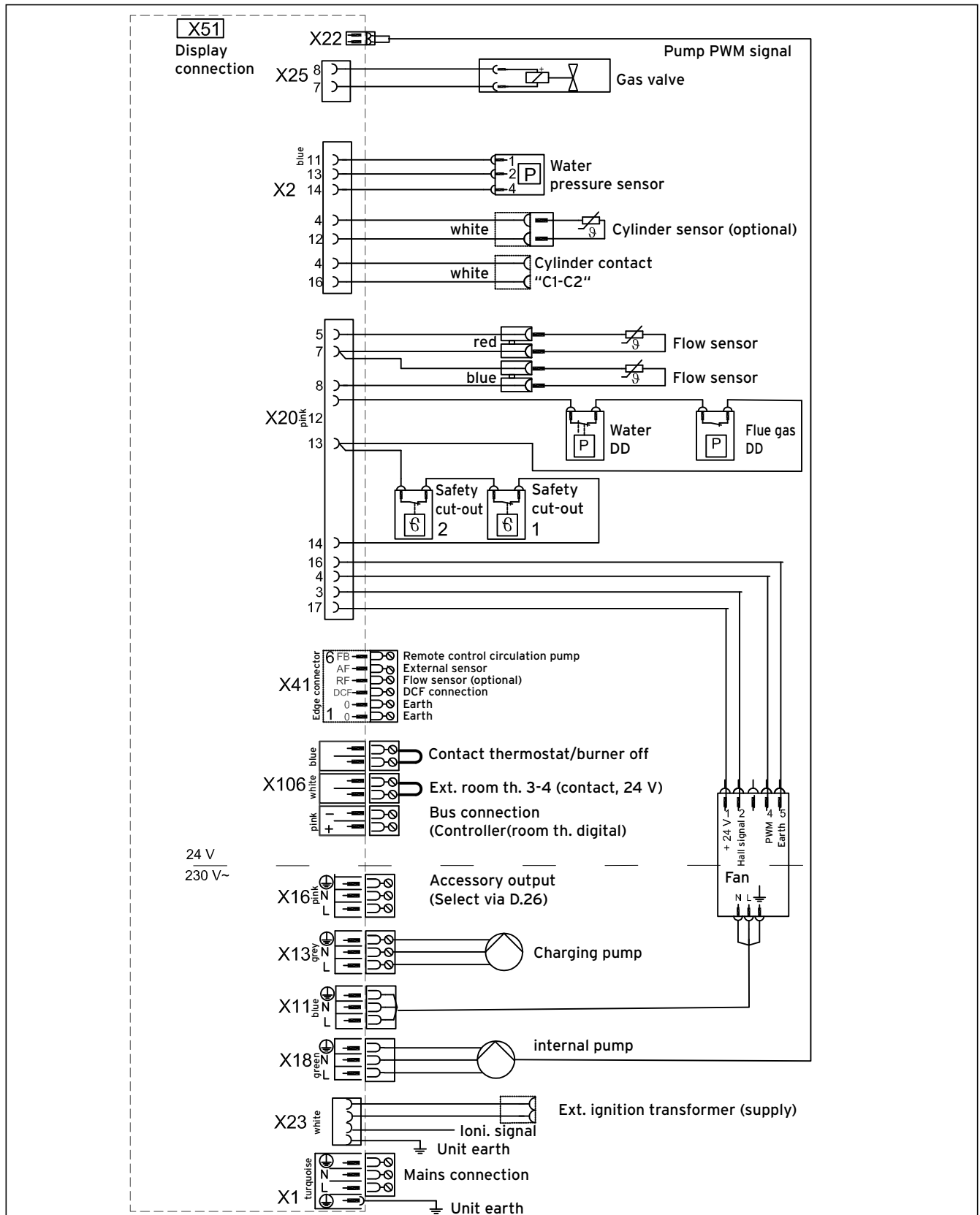
You can connect two additional components to the ecoTEC plus using the Vaillant multi-functional module "2 from 7" (Accessories).

You can switch the following components:

- Circulation pump
 - External pump
 - Cylinder charging pump
 - Fume extractor hood/flue non-return flap
 - External solenoid valve
 - External fault signal
 - Not active
 - Remote control eBUS (not active)
 - Anti-legionella pump (not active)
- Install the components in accordance with the respective installation instructions.
 - Select diagnostics code **D.018** to actuate relay 1 on the multi-functional module at installer level (→ **section 12.1**).
 - Select diagnostics code **D.028** to actuate relay 2 on the multi-functional module at installer level (→ **section 12.1**).

8 Electrical installation

8.6 Connection wiring diagram



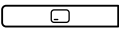
8.4 Connection diagram for the ecoTEC plus electronics box

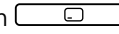
9 Establishing operational readiness

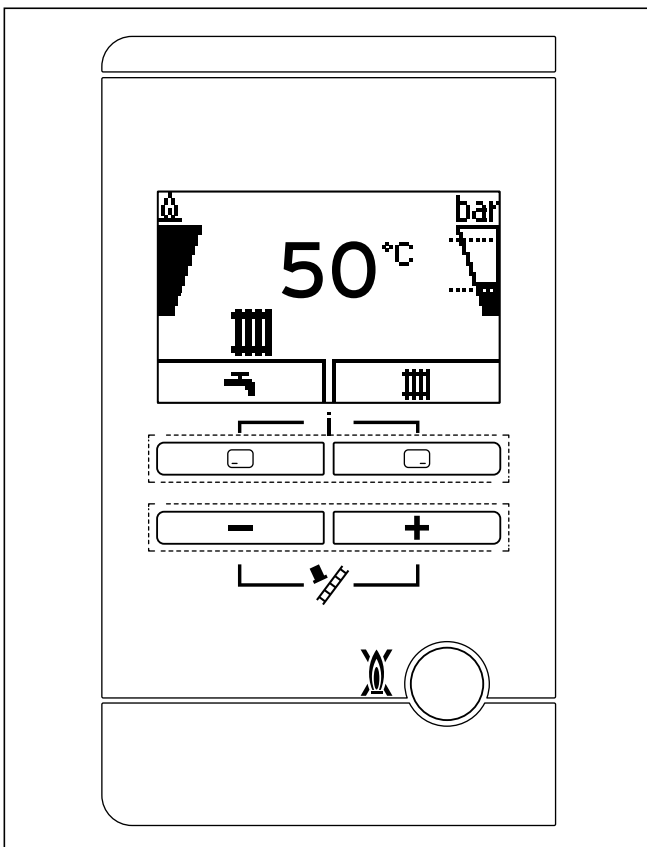
The Vaillant ecoTEC plus boiler is fitted with a digital information and analysis system (DIA). If additional settings are required, which have not been configured using the installation assistant, you can view and modify further parameters using the DIA.

The operating concept and operation of the boiler are described in the → **Operating instructions** of the boiler. The read-off and setting facilities of the operator level are also described in the → **Operating instructions**.

9.1 Reading the temperature or pressure display

Left-hand button : Hot water handling → Cylinder temperature

Right-hand button : Heating mode → Heating temperature/water pressure



9.1 Reading the temperature or pressure display

The boiler is fitted with an analogue pressure gauge and also has a symbolic bargraph display for the fill pressure of the heating installation and a digital pressure and temperature display.

You can see the pressure gauge once you have removed the front casing of the boiler.

Press the right-hand selection button twice to read off the digital filling pressure value.

9.2 Preparing the heating water

Observe the specifications concerning heating water preparation in (→ **section 2.4.5**).

9.3 Filling and purging the heating installation



Caution.

Risk of material damage caused by contaminated lines!

Foreign bodies, such as welding remnants, sealing residue or dirt in the water pipes, may cause damage to the boiler. It is recommended that you use a dirt trap on older systems upstream of the ecoTEC plus.

- Thoroughly flush newly installed part of the heating installation prior to start-up.

The system is filled via a filling connection installed on-site, which must be fitted at a suitable location in the heating circuit. This connection must be removed again after the filling process is complete. If the local water authority does not permit temporary connections you must use a closed system filling pump with an interrupt vessel. Automatic filling of the heating system does not take place from the hot water side. (Alternative procedures for filling closed systems are described in BS 5449).

To ensure the correct operation of the heating installation, the indicator on the pressure gauge must point to the upper half of the grey area or in the middle of the bar graph display (marked by the dashed limit value) when the heating installation is cold. This corresponds to the filling pressure between the minimum and maximum recommended pressure. You can also display the exact filling pressure.

- Flush the newly installed part of the heating installation thoroughly before filling it.
- Open all thermostatic radiator valves in the heating installation.
- Select check programme P.6 (→ **section 11.4**).

The check programme starts, the burner and pump are switched off (to fill or drain the boiler).

9.3.1 Filling the heating installation

- Connect a hose between a cold water valve and the filling line of the heating system.
- In order to fill the heating installation, first open the cold water valve.
- Open all thermostatic radiator valves.

9 Establishing operational readiness

- Check that both service valves on the boiler are open.
- Slowly open the stop valve on the filling line so that the water flows into the heating system.



If the water pressure in the heating system is too low, the display view switches between fault message F.22 and the display of the actual pressure when the boiler is switched on.

- Purge the lowest radiator until water flows out of the purging valve without bubbles.
- Purge all other radiators until the entire heating system has been filled with water. Close all purging valves.
- Use the display to monitor the rising filling pressure in the heating installation.
- Top up with water until the pressure gauge display is in the middle of the grey area and the required filling pressure appears on the display.
- After filling, close the stop valve on the filling line as well as the cold water valve and remove the filling hose.
- Check all connections and the entire system for leaks.
- Each time the unit is filled and topped up, document this in a system book.



Ensure that the filling and drainage tap in the heating installation is connected to a cold water valve in accordance with the standard.

9.3.2 Purging the heating installation

- To purge the heating installation, select check programme P.0 (→ **section 11.4**).

The boiler does not start up, the internal pump operates intermittently and, as an option, purges the heating circuit or the hot water circuit. The display shows the filling pressure of the heating installation.

- The filling pressure of the heating installation must not fall below 0.08 MPa (0.8 bar) when purging is in progress as, otherwise, this will not be carried out properly.

Check programme P.0 runs for 6.5 minutes.

- Purge all the radiators.
- Then check the water pressure in the heating installation again.

At the end of the filling procedure, the filling pressure of the heating installation should be at least 0.02 MPa (0.2 bar) above the counterpressure of the expansion vessel ("Exp") ($P_{\text{Installation}} \geq P_{\text{Exp}} + 0.02 \text{ MPa (0.2 bar)}$).

- If there is still too much air in the heating installation at the end of check programme P.0, repeat the check programme.
- Check all connections for leak-tightness.

9.3.3 Flush the heating installation for the first time ("cold")



The complete heating system must be flushed at least twice: once with cold water and once with hot water in accordance with the following instructions.

- Check whether all thermostatic radiator valves and both service valves on the boiler are open.
- Connect a hose to the drain valve that is located at the lowest position in the heating system.
- Fully open the radiator valves and drain cocks to ensure that the water drained quickly. Starting at the top of the system open the air vents on the radiators to aid complete draining of the contaminated water.
- Close the drain cocks.
- Refill the heating system with water, as described in (→ **section 9.3**).
- Check that the expansion relief valve of the heating system is functioning correctly by turning the handle on the valve.
- Check the pressure in the heating system and top up with water if necessary.
- Close the filling valve and the cold water valve.

9.4 Preventing low water pressure

To prevent damage to the heating installation that is caused by low water pressure, the boiler is fitted with a water pressure sensor. If the water pressure falls below 0.1 MPa (1.0 bar), the boiler indicates low pressure by displaying a flashing pressure value. If the water pressure falls below 0.05 MPa (0.5 bar), the boiler switches off. The display shows **F.22**.

- Top up the heating water and switch the boiler on again.

A flashing pressure value appears on the display until a pressure of 0.11 (1.1 bar) or higher has been reached.

- If you notice frequent drops in pressure, then determine and eliminate the cause.

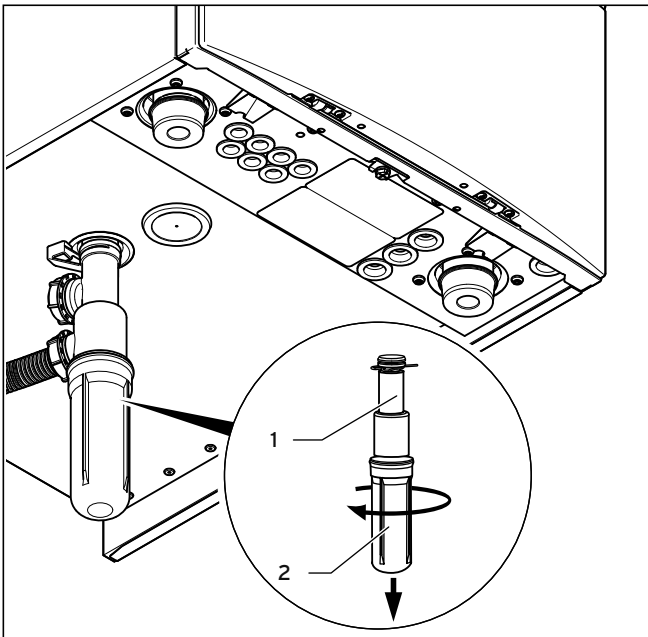
9.5 Filling the condensate siphon



Danger!
Risk of poisoning due to escaping flue gas.

An empty or insufficiently filled condensate siphon may allow flue gas to escape into the room air.

- Fill the condensate siphon with water before starting up the boiler.



9.2 Filling the condensate siphon

- Remove the siphon lower section (2) by unscrewing it from the condensate siphon (1).
- Fill the siphon lower section with water up to about 10 mm below the upper edge.
- Secure the siphon lower section correctly to the condensate siphon again.

9.6 Checking the gas ratio setting

9.6.1 Default setting



Caution.

An incorrect gas-family setting can cause operating faults or a reduction in the working life of the boiler!

If the unit design does not correspond to the locally available gas family, you will experience error functions or you will have to replace boiler components prematurely; for example, a liquid-gas boiler must not be operated with natural gas.

- Before starting up the boiler, compare the details concerning the set type of gas on the identification plate with the type of gas supply at the installation site.

If the unit should be operated with liquid gas (propane), do not start up the unit. Instead, contact Vaillant Customer Service. They will convert the unit and then start it up. The same applies for the conversion from liquid gas (propane) to natural gas. This conversion must also only be carried out by Vaillant Customer Service.

The combustion of the ecoTEC plus has been factory tested and is preset for operation with the gas group indicated on the identification plate (→ **table 13.1**). In some areas these settings may need to be adjusted at the installation site.

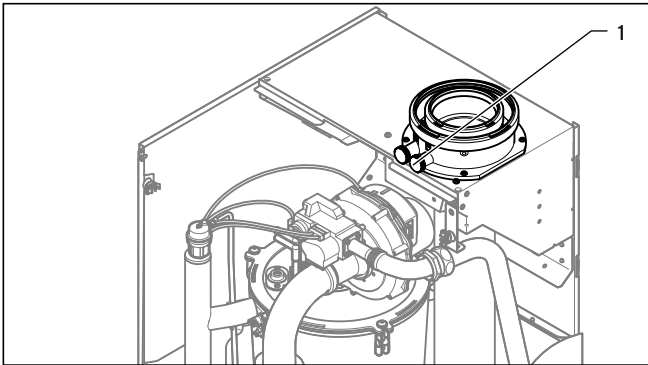


It is not necessary to check the gas volume during initial start-up. The adjustment takes place based on the CO₂ component in the flue gas. The gas ratio setting must be defined in the attached commissioning checklist.

9.6.2 Checking the leak-tightness of the flue gas system and for flue gas recirculation

- Check that the flue gas system is intact, in accordance with British Gas TB 200.
- If the flue gas system is longer than 2 m, we urgently recommend that you test the system for flue gas recirculation as described below.

9 Establishing operational readiness



9.3 Flue gas and air analysis points

Key:

- 1 Flue gas analysis point
- 2 Air analysis point

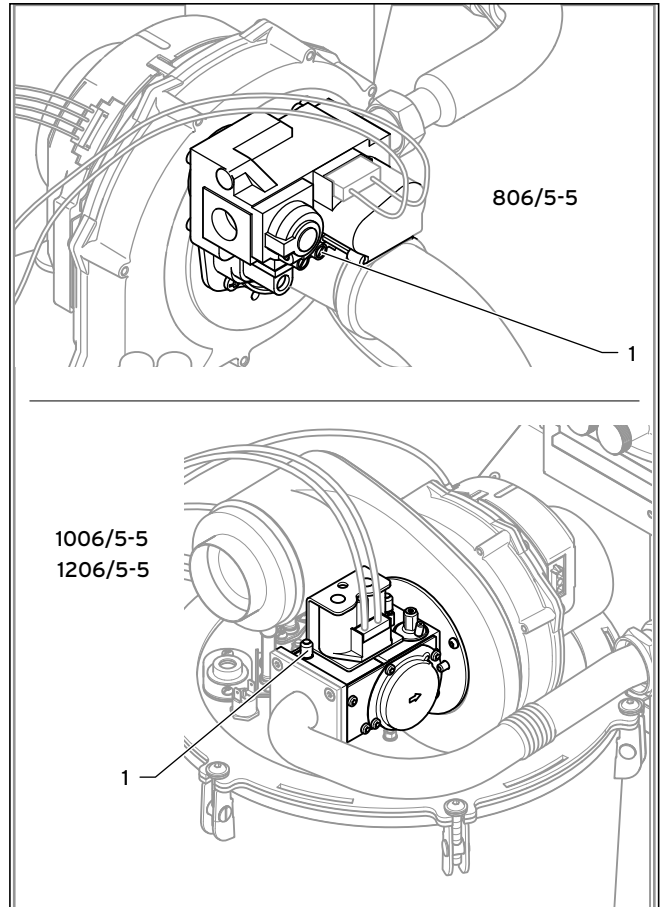
- Use the air analysis point (2) to check for flue gas recirculation.
- Use the flue gas measuring instrument.
- If you discover CO or CO₂ in the fresh air, search for a leak in the flue gas system or for flue gas recirculation.
- Eliminate the damage.
- Repeat the above-mentioned test to determine if the fresh air contains CO or CO₂.
- If you cannot eliminate the damage, you must not start up the boiler.

9.6.3 Checking the gas connection pressure (gas flow pressure)

- Ensure that the gas connection pressure (gas flow pressure) can be still achieved if all other gas-fired boilers in the dwelling/house are in operation.
- Remove the front casing from the boiler (→ **section 4.6**).
- Close the gas isolator cock of the boiler.



Permissible gas connection pressure (gas flow pressure) for natural gas operation:
2 kPa (20 mbar) to 2.5 kPa (25 mbar)



9.4 Measuring the gas connection pressure (gas flow pressure)

- Undo the sealing screw of the measuring nipple (1) (lower screw) at the gas valve using a screwdriver.
- Connect a digital pressure gauge or U tube manometer to the measuring nipple (1).
- Open the gas isolator cock of the boiler.
- Start the boiler by activating check programme P.1, as described in → **section 14.4**.
- Turn the room thermostat fully up to that the maximum heat in the heating installation can be shown.
- Measure the gas connection pressure in comparison with atmospheric pressure.



Caution.
Possible material damage and operating faults caused by incorrect connection pressure.

If the gas connection pressure lies outside the permissible range, this can cause operating faults on the boiler.

- Do not make any settings on the boiler.
- Do not operate the boiler.
- Check the pressure control system at the entrance to the property.
- Advise the responsible gas supply company.

If the gas connection pressure (gas flow pressure) is within the permissible range, proceed as follows:

- Switch off the boiler by:
 - Ending check programme P1 as described in → **section 11.4.**
- Close the gas isolator cock of the boiler.
- Remove the pressure gauge and tighten the sealing screw of the measuring nipple (1).
- Open the gas isolator cock of the boiler.
- Ensure that there are no leaks at the sealing screw.
- Refit the front casing.
- Reset boiler controls for normal operation.
- Make a note of the gas connection pressure (gas flow pressure) (kPa or mbar) of the boiler in the commissioning checklist for starting up the gas-fired boiler.

If the gas connection pressure (gas flow pressure) is **not** within the permissible range and you cannot eliminate the fault, please notify the gas supply company or the Vaillant Service Solutions Team, and proceed as follows:

- Switch off the boiler by ending check programme P1.
- Close the gas isolator cock of the boiler.
- Remove the pressure gauge and re-tighten the sealing screw of the measuring nipple (1).
- Open the gas isolator cock.
- Ensure that there are no leaks at the sealing screw.
- Turn the gas isolator cock off.
- Refit the front casing.
- Disconnect the power supply to the boiler.
- **You must not start up the boiler yourself.**

10 Operation

10.1 Calling up the installer level





Caution.
Risk of damage caused by incorrect handling.

Incorrect settings at installer level can cause damage to the heating installation.




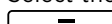
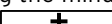
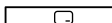
- You must only access the installer level if you are an approved competent person.

The following overview shows the options for reading information and making settings at installer level.

The installer level is secured against unauthorised access with a password because incorrect parameter settings at this level may cause functional faults and damage to the heating installation.

- Press the left  and right  selection buttons ("i") **simultaneously**

The following menu appears on the display.

- Scroll using the minus button  or the plus button  until the menu point "Installer level" appears.
 - Press the right-hand selection button  to select the menu point.
- "Enter code" and the value "00" appear in the display.
- Select the value 17 (code) using the minus button  or the plus button .
 - Press the right-hand selection button  to confirm the entered code.

The installer level appears with a selection of menu points.



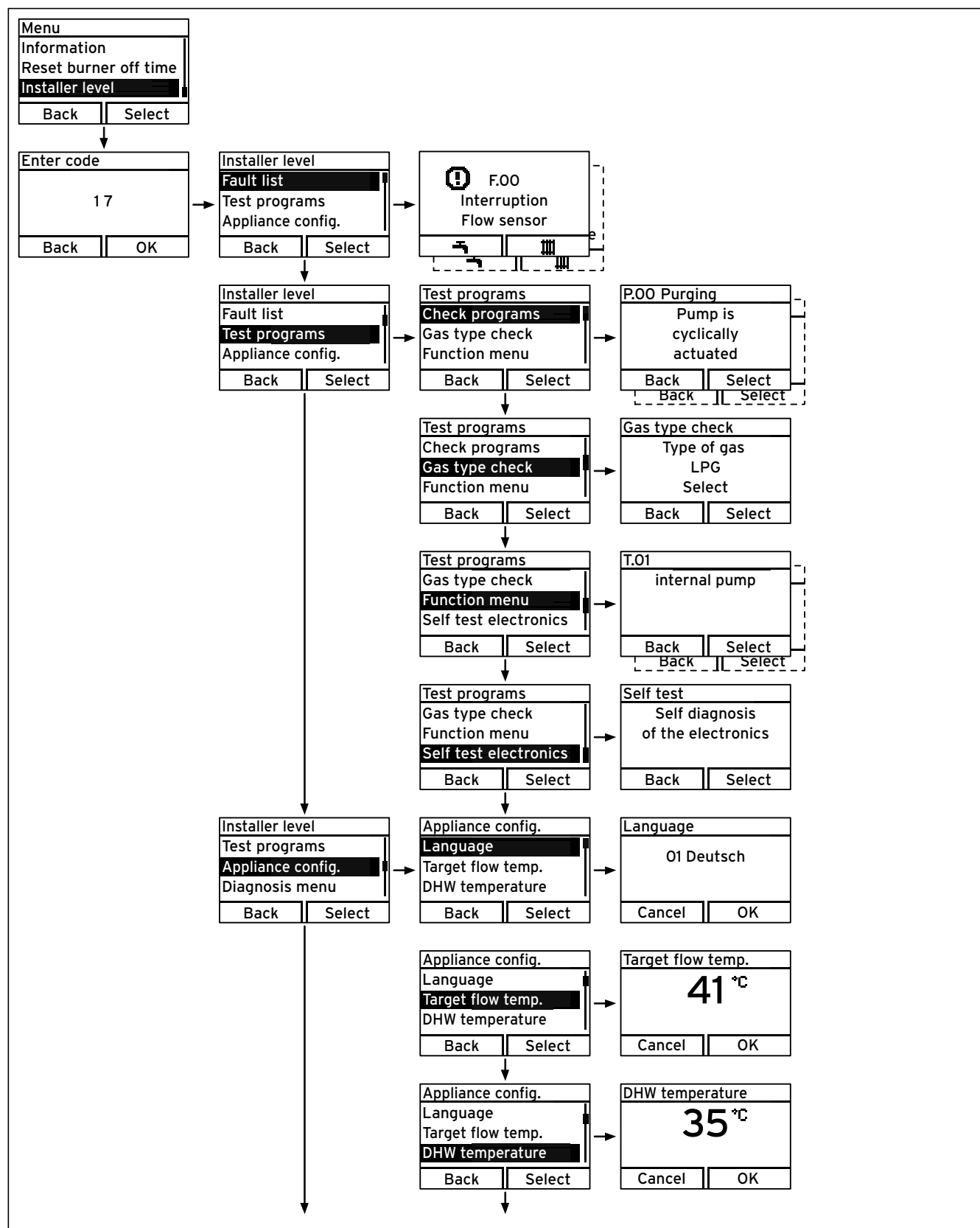
At the installer level the path to access the Fault list, Test Programmes, the Appliance Configuration, Diagnosis Menu and Installation Assist are outlined in the following overview, e.g.

Menu → Installer level → Test programmes → Check programmes.

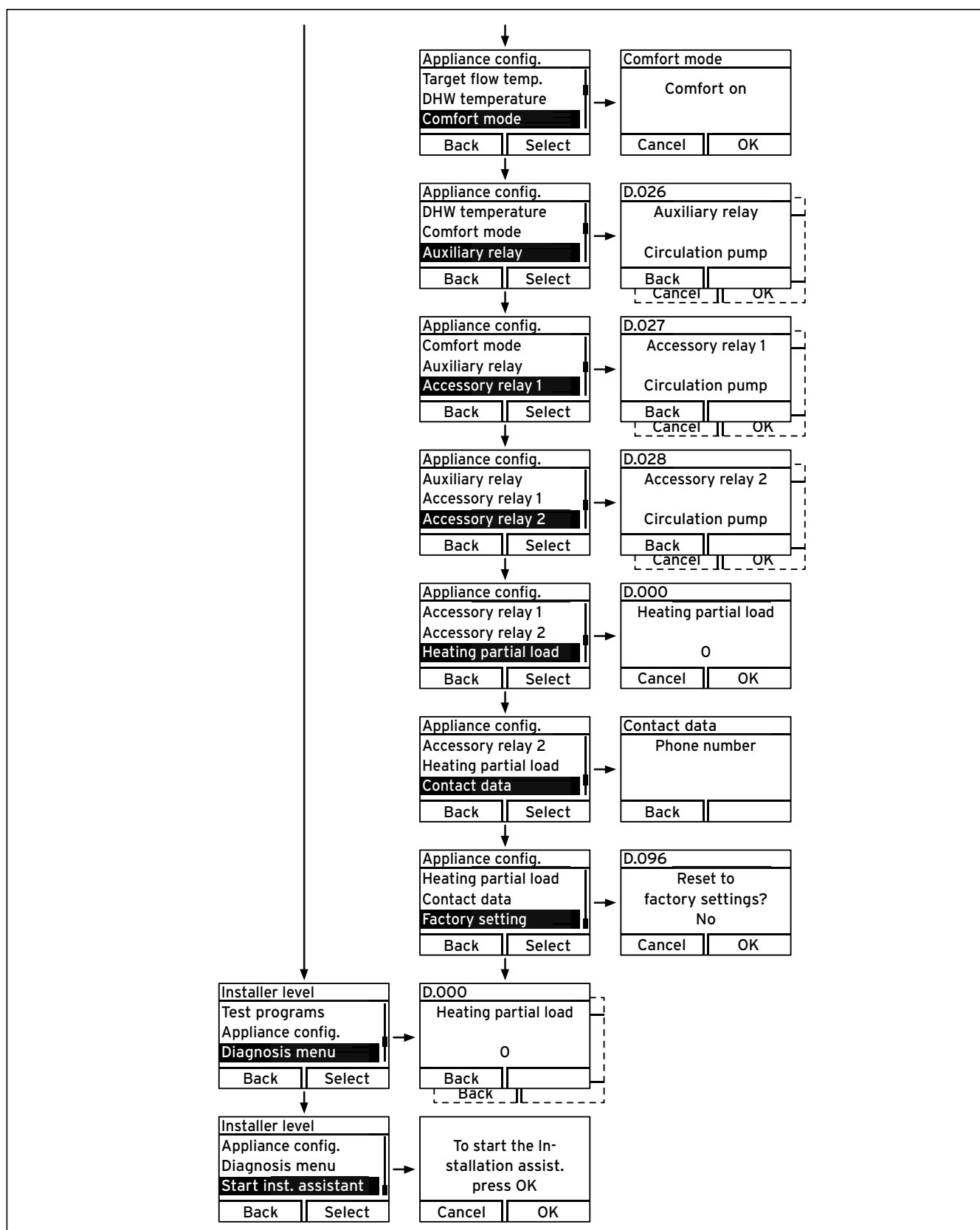


If you exit the installer level and then access it again within 15 minutes, you do not have to enter the code again.

10.2 Overview of the menu structure



10.1 Overview of the menu structure for installer level, part 1



10.2 Overview of the menu structure for installer level, part 2

11 Start-up



Danger!

Risk of poisoning and scalding caused by escaping hot flue gases.

Hot flue gas may escape and cause poisoning and scalding, if the boiler is operated with an incompletely fitted or open flue pipe or if the boiler is operated with the front casing open in the event of internal leaks.

- Operate the boiler
 - for start-up
 - for testing
 - in continuous mode
- only when the front casing is closed and the flue pipe is fully installed and closed.



Initial start-up is performed by a Vaillant customer service engineer or by a competent person approved by Vaillant. The appliance must be commissioned by a competent person who is in possession of a calibrated gaz analyser. Initial start-up is performed in accordance with the commissioning checklist and is also acknowledged there by the approved competent person. The commissioning checklist that is attached to the installation instructions must be filled out and carefully stored with the unit's documentation.



Before filling the heating circuit and during further operation, the cap of the automatic air vent must be open.

To purge the heating circuit, use purging programme "P.O" (→ **section 11.4**).

Auxiliary service equipment:

The following test and measuring equipment is required for start-up:

- Calibrated CO₂-measuring instrument
- Digital or U tube manometer

11.1 Switching on the boiler

- Press the on/off button (→ **Operating instructions**).

The basic display appears on the display.

11.2 Installation assistant

The installation assistant is started when switching on the boiler for the first time. It provides easy access to the main configuration settings for installation of the unit. The instal-

lation assistant is displayed each time the boiler is switched on until it has been completed successfully.

You must confirm the launching of the installation assistant. Once confirmed, all of the heating and process water demands from the boiler are blocked. This status remains until the installation assistant is completed or cancelled. If you do not confirm the launch of the installation assistant, it is closed 10 seconds after you switch on the unit and the basic display then appears. The next time the boiler is switched on using the on/off button, the installation assistant will be started again.

11.2.1 Language

- Select the required language using the minus or plus button.
- Press the right-hand selection button to confirm the selected language.

The language change must be confirmed a second time in order to avoid an unintentional change.



If you unintentionally select a language that you cannot understand, you can change it again as described below.

- Press the right-hand selection button and the plus button **simultaneously and hold** them down.
- Press the fault clearance key for a short time.
- Continue to press and hold the right-hand selection button and the plus button until the display offers you the option to set the language.
- Use the minus button or plus button to select your desired language.
- Confirm the change by pressing the right-hand selection button ("OK").

11.2.2 Purging

- Fill the heating circuit slowly and purge the boiler via the purging device fitted in the supply pipe.
- Then start the purging check programme either via the installation assistant or P.O (→ **section 11.4**).

11.2.3 Heating temperature

- Press the "Operating Mode" selection button. The heating temperature is displayed.
- Use the plus/minus buttons to set the desired temperature.
- Confirm your setting with "OK".

11.2.4 Heating partial load

The heating partial load of the Vaillant ecoTEC plus boiler is factory set to "auto". This means that the boiler independently determines the optimum heating output depending on the current heat demand of the system. A setting is normally no longer required. The setting can also be changed at a later point using diagnostics code D.000.

11.2.5 Auxiliary relay and multi-functional module

Additional components that are attached to the boiler can be adjusted directly here. This setting can be changed using diagnostics codes D.026, D.027 and D.028.

11.2.6 Competent person telephone number

You can store your telephone number in the unit menu. The operator can display this number in the information menu. The telephone numbers can be up to 16 digits long and must not contain any spaces. If the telephone number is shorter, end the entry after the last digit by pressing the right-hand selection button. All of the digits to the right will be deleted.

11.2.7 Ending the installation assistant

If you have successfully run through and confirmed the installation assistant, it will not start up automatically next time the unit is switched on.

11.2.8 Restarting the installation assistant

You can restart the installation assistant any time by calling it up manually in the menu.

Menu → Installer level → Installation assistant

11.3 Appliance configuration and diagnostics menu

If you have already filled and purged the heating installation and have ended the installation assistant but wish to set the most important system parameters again, you can also call up the "Appliance configuration" menu point.

Menu → Installer level → Appliance configuration

All of the setting options for more complex systems can be found in the diagnostics menu (→ section 12).

Menu → Installer level → Diagnostics menu

11.4 Using test programmes

In addition to the installation assistant, you can also call up other test programmes for start-up.





Menu → Installer level → Test programmes

There, you can not only find the function menu (→ section 13.3) and an electronics self-test (→ section 13.3.1) but also the check programmes.

Menu → Installer level → Test programmes → Check programmes

By activating various check programmes, you can trigger special functions on the boilers.

The following four check programmes are available:

Display	Meaning
P.0 ¹⁾	<p>Purging check programme: The heating circuit and the hot water circuit are purged via the automatic purging valve (the cap of the automatic purging valve must be released).</p> <p>1 x right-hand selection button (" → "): Start purging heating circuit</p> <p>2 x right-hand selection button (" → "): Start purging hot water circuit</p> <p>1 x left-hand selection button ("Cancel"): Exit purging programme</p> <p>The heating pump is timed Note: Purging programme runs for 6.5 minutes.</p>
P.1	Maximum load check programme: After successful ignition, the boiler is operated at maximum heat input.
P.2	Minimum load check programme: After successful ignition, the boiler is operated at minimum heat input.
P.6	Filling mode check programme: The diverter valve (VUV) is moved to the mid-position. The burner and pump are switched off (to fill or drain the boiler).

11.1 Overview of the check programmes

- ¹⁾ Purging the heating circuit:
Diverter valve in heating position, actuation of the heating pump for 15 cycles: 15 s on, 10 s off. Display: "Active heating circuit".
Purge hot water circuit:
After the above-mentioned cycles have passed or after repeated confirmation using the right-hand selection button: diverter valve in hot water position, actuation of heating pump as above. Display: "Active hot water circuit".

Starting check programmes

Menu → Installer level → Test programmes → Check programmes

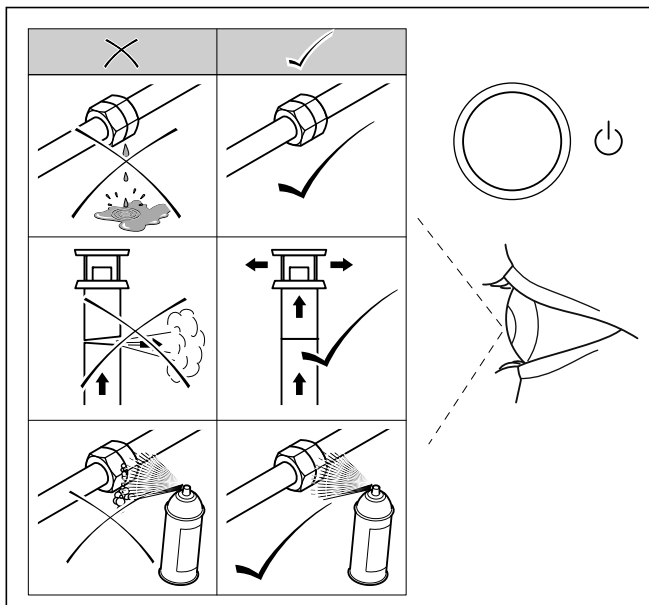
11 Start-up

11.5 Checking the function of the boiler

- After completing the installation and the gas ratio setting, perform a complete function check of the boiler before starting up the boiler and handing it over to the operator.
- Document the setting values and that all checks have been performed in the commissioning checklist.

11.5.1 Carrying out a full function test

- Start up the boiler in accordance with the relevant operating instructions and commissioning checklist.
- If you have not yet completed the installation assistant and have then confirmed, this will be restarted when you switch on the unit. Before continuing, complete the installation assistant (→ **section 11.2**).



11.1 Checking leak-tightness

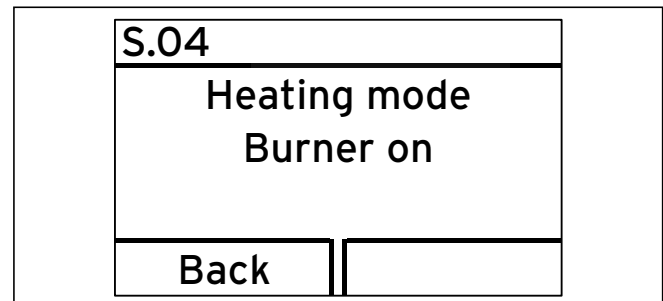
- Check the gas supply line, the flue gas installation, the heating installation and the hot water pipes for leak-tightness.
- Check the flue pipe for proper installation.
- Make absolutely sure that the front casing is properly closed.
- Check the operation of the heating (→ **section 11.5.2**).
- Hand over the boiler to the operator (→ **section 12.2**).
- Explain the basic operation of the heating installation to the operator.

You can display the current operating condition of the boiler in the "Live monitor" on the boiler display (→ **section 14.2.1**).

Menu → Live monitor

11.5.2 Checking the heating mode

- Switch on the boiler.
- Make sure that there is a heat requirement.
- Activate the Live monitor (→ **section 14.2.1**).



11.2 Live monitor - display during heating mode

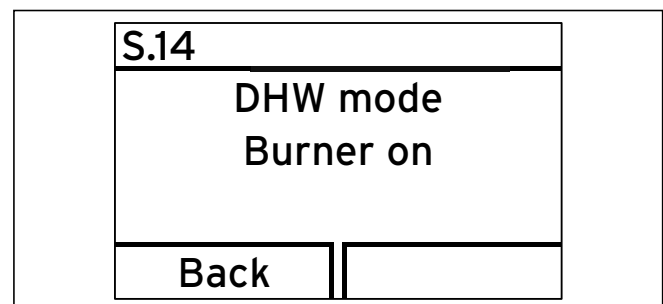
If the boiler is running correctly, the display will show the status code "S.04". The status code displayed will also be explained by the plain text display "Heating mode, burner on".

11.5.3 Checking the hot water generation

To test that hot water generation is functioning correctly, proceed as follows:

- Switch on the boiler.
- Turn on a hot water draw-off point fully.
- Activate the Live monitor (→ **section 14.2.1**).

When the hot water generation is working correctly the display shows "S.14".



11.3 Live monitor - Hot water generation

12 Adapting the unit to the heating installation

The installation assistant is started when the boiler is switched on for the first time (→ **section 11.2**).

If you have already filled the heating installation and terminated the installation assistant, but wish to set the most important system parameters again, you can also call up the "Appliance configuration" menu point.

Menu → Installer level → Appliance configuration

All of the settings for more complex systems can be found in the diagnostics menu.

Menu → Installer level → Diagnostics menu

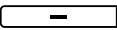
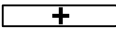
12.1 Overview of the parameters in the diagnostics menu

Menu → Installer level → Diagnostics menu

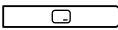
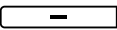
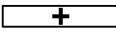

You can use the parameters that are marked as adjustable in → **table 12.1** to adapt the boiler to the heating installation and the needs of the customer:



You can enter your settings in the last column after setting the system-specific parameters.

- Press the minus button  or the plus button  to switch between the displayed diagnostics codes.

For modifiable parameters:

- Press the right-hand selection button  ("Select") to select the parameters to be changed.
- Press the minus button  or the plus button  to change the current setting.
- Press the right-hand selection button  ("OK") to confirm the change.

The change is saved.

12 Adapting the unit to the heating installation

Code	Parameters	Adjustable values	Factory setting	Your own setting
D.000	Heating partial load	Adjustable heating partial load in kW auto: Unit automatically adjusts max. partial load to current system demand)	Auto	
D.001	Overrun time of internal heating pump for heating mode	2-60 min	5 min	
D.002	Max. burner anti-cycling time heating at 20°C flow temperature	2-60 min	20 min	
D.017	Heating flow/return regulation changeover	0 = Flow, 1 = Return	0	do not adjust
D.018	Pump operating mode setting	1 = Comfort (continuously operating pump) 3 = Eco (intermittently operating pump)	3 = Eco	
D.027	Switching of relay 1 on the "2 in 7" multi-functional module VR 40	1 = Circulation pump 2 = Ext. pump 3 = Charging pump 4 = Extractor hood 5 = Ext. solenoid valve 6 = Ext. error message 7 = Not active 8 = Remote control eBUS (not yet supported) 9 = Anti-legionella pump (not active)	1	
D.028	Switching of relay 2 on the "2 in 7" multi-functional module VR 40	1 = Circulation pump 2 = Ext. pump 3 = Charging pump 4 = Extractor hood 5 = Ext. solenoid valve 6 = Ext. error message 7 = Not active 8 = Remote control eBUS (not yet supported) 9 = Anti-legionella pump (not active)	2	
D.046	Pump type	0 = Relay with disable facility 1 = PWM with disable facility	0	
D.050	Offset for minimum speed	In rpm, adjustment range: 0 to 3000	Rated value	
D.051	Offset for maximum speed	In rpm, adjustment range: -990 to 0	Rated value	
D.071	Target value maximum heating flow temperature	40 to 85°C	75°C	
D.072	Internal pump overrun after cylinder charging	Adjustable from 0 to 10 min	2 min	
D.077	Partial load for cylinder charging	[kW]		
D.084	Maintenance indicator: Number of hours until the next maintenance	Adjustment range: 0 to 3010 hrs und "-" for deactivated	"-"	
D.093	DSN unit variant setting	Adjustment range: 0 to 99		
D.094	Delete fault history	1 = Delete fault list		
D.096	Factory setting	1 = Reset all adjustable parameters to factory setting		

12.1 Adjustable parameters of the diagnostics menu

12.1.1 Setting the heating partial load

The heating partial load of the Vaillant ecoTEC plus boiler is factory set to "auto". This means that the unit independently determines the optimum heating output depending on the current heat demand of the system. A setting is normally no longer required. If you still want to set a fixed maximum heating partial load, you can set a value under diagnostics code **D.000**, which equates to the unit output in kW.

If the unit is operated in cascade, you must increase the fan speed of the unit partial load to 1500 rpm (diagnostics code **D.050**).

If a domestic hot water cylinder (cylinder type VIH) is installed, you can adjust the partial load setting for the cylinder charging to the cylinder type.

12.1.2 Adjusting pump overrun and pump operating mode

The pump overrun time for heating mode is set at the factory to a value of 5 minutes. You can set the pump overrun under diagnostics code **D.001** within the range of 1 minute to 60 minutes. You can set a different pump operating mode under diagnostics code **D.018**. Here you have the choice between Eco and Comfort.

Comfort (continuously operating pump)

The internal pump is switched on when the heating flow temperature is not at "Heating off" (→ **Operating instructions**) and the heating requirement is enabled via an external controller.

Eco (intermittently operating pump)

In the factory, the Eco pump operating mode is set. This pump operating mode is useful for removing residual heat after cylinder charging when the heat demand is extremely low and large temperature spreads exist between the cylinder charging and heating mode target values. This prevents living rooms from being under-supplied. If there is a heat demand, the pump is switched on every 25 minutes for 5 minutes once the overrun time has elapsed.

If a system partition is installed, you must set the pump to Continuous mode (85%) (set diagnostics code **D.014** to 4).

12.1.3 Setting the maximum flow temperature

The maximum flow temperature for the heating mode is set at the factory to 75 °C. You can set this under diagnostics code **D.071** in the range 40 °C to 85 °C.

12.1.4 Setting the return flow temperature control

If the boiler is connected to an underfloor heating system, the temperature control can be changed from flow temperature regulation (default setting) to return flow temperature control under diagnostics code **D.017**.

12.1.5 Burner anti-cycling time

Setting the burner anti-cycling time

To prevent frequent switching on and off of the burner and therefore energy loss, an electronic restart lockout is activated for a specific period each time the burner is switched off. You can adjust the burner anti-cycling time to the conditions of the heating installation.

The burner anti-cycling time is only activated for the heating mode.

Hot water handling during a burner anti-cycling time does not affect the timer.

You can set the maximum burner anti-cycling time in the installer level under diagnostics code **D.002** within the range of 2 minutes to 60 minutes (default setting: 20 minutes). The effective burner anti-cycling time depends on the current target flow temperature and the maximum burner anti-cycling time set.

The effective burner anti-cycling times with respect to the target flow temperature and the maximum set burner anti-cycling time can be found in the following table.



The remaining burner anti-cycling time following a regular shutdown in heating mode can be called up under diagnostics code **D.067**.

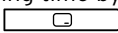
Resetting the remaining burner anti-cycling time

You have two options to reset the remaining burner anti-cycling time:

1st option

Menu → Reset burner anti-cycling time

The current burner anti-cycling time appears in the display.

- Confirm the reset of the burner anti-cycling time by pressing the right-hand selection button  ("Select").

2nd option

- Press the fault clearance key (→ **Operating instructions**).


12 Adapting the unit to the heating installation

T _{Flow} (target) [°C]	Set maximum burner anti-cycling time [min]												
	1	5	10	15	20	25	30	35	40	45	50	55	60
20	2.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0	60.0
25	2.0	4.5	9.2	14.0	18.5	23.0	27.5	32.0	36.5	41.0	45.0	50.0	54.5
30	2.0	4.0	8.5	12.5	16.5	20.5	25.0	29.0	33.0	37.0	41.0	45.0	49.5
35	2.0	4.0	7.5	11.0	15.0	18.5	22.0	25.5	29.5	33.0	36.5	40.5	44.0
40	2.0	3.5	6.5	10.0	13.0	16.5	19.5	22.5	26.0	29.0	32.0	35.5	38.5
45	2.0	3.0	6.0	8.5	11.5	14.0	17.0	19.5	22.5	25.0	27.5	30.5	33.0
50	2.0	3.0	5.0	7.5	9.5	12.0	14.0	16.5	18.5	21.0	23.5	25.5	28.0
55	2.0	2.5	4.5	6.0	8.0	10.0	11.5	13.5	15.0	17.0	19.0	20.5	22.5
60	2.0	2.0	3.5	5.0	6.0	7.5	9.0	10.5	11.5	13.0	14.5	15.5	17.0
65	2.0	1.5	2.5	3.5	4.5	5.5	6.5	7.0	8.0	9.0	10.0	11.0	11.5
70	2.0	1.5	2.0	2.5	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5
75	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

12.2 Effective burner anti-cycling times

12.1.6 Setting the maintenance interval

You can define maintenance intervals for the ecoTEC plus. Using this function, the message that the boiler must be serviced appears in the display after a defined, configurable number of burner operating hours.

After the set burner operating hours have expired, the maintenance symbol  (open-end spanner) appears next to the current flow temperature. The display on the eBUS controller (Accessories) shows the information "Maintenance" "MAIN".

- Set the operating hours until the next service using diagnostics code **D.084**.

You can see the operating hours in increments of ten from 0 to 3010 h.

If you do not enter a figure under diagnostics code **D.084**, but instead enter the symbol "-", then the "Maintenance display" function is not active.



On completion of the set operating hours, you must set the maintenance interval again in diagnostics mode.

12.1.7 Setting the pump output

The ecoTEC plus boiler can be equipped with a pump group with a high-efficiency pump. This pump is fully modulating and is actuated according to the heat requirement. The remaining feed head of this pump group is designed so that the full heat output is transported as far as the system separation.

The remaining feed heads of the pumps can be found in → **section 6.2**.

12.2 Handing the boiler over to the operator



Danger!

Risk of poisoning and burns caused by escaping hot flue gas!

Hot flue gas may escape and cause poisoning and scalding, if the boiler is operated with an incompletely fitted or open flue pipe or if the boiler is operated with the front casing open in the event of internal leaks.

- Operate the boiler
 - for start-up
 - for testing
 - in continuous modeonly when the front casing is closed and the flue pipe is fully installed and closed.

- Explain to the operator how to correctly set the temperatures, the controllers and the thermostatic radiator valves (economically).

- When you have finished the installation, attach the sticker supplied (835593) to the front of the unit in the user's language. The sticker is delivered with the boiler. Initial start-up is carried out by an approved competent person. This person documents the initial start-up with the associated setting values on the commissioning checklist. This checklist remains with the unit documentation. You must brief the operator of the boiler on the handling and function of the ecoTEC plus.
- Explain the importance of regular maintenance by a heating specialist company to the operator. It is strongly recommended that a maintenance contract be taken out to ensure regular maintenance. You can obtain more information from Vaillant Service Solutions (+44 (0) 870 6060 777).
- In the commissioning checklist, enter the operating pressure of the central heating, the heat supply (in kW) and the temperature difference between the flow and return. If this boiler is not installed and commissioned in accordance with the manufacturer's instructions, this may void the guarantee (Note: Your legal rights remain unaffected by this.)
- Provide the operator with all relevant instructions and unit documentation for safe-keeping.
- Go through the operating instructions with the operator
- Answer any questions the operator may have.
- Make the operator aware of the need to keep the instructions near the boiler but not in or on the boiler.
- Draw special attention to the safety instructions which the operator must follow.
- Instruct the operator about measures taken to ensure the supply of combustion air and flue gas guiding. In particular, instruct the operator that he must not make any changes to the combustion air supply and flue gas guiding.
- Explain to the operator how to check the water level/filling pressure of the system.
- Explain to the operator which measures are required to top up and purge the heating installation if required.

13 Inspection and maintenance

13.1 Inspection and maintenance intervals



Danger!
Negligent inspection and maintenance results in a risk of injury as well as a risk of material damage!

Negligence in inspection and maintenance work as well as failure to comply with the specified inspection and maintenance intervals can impair the operating safety of the boiler and lead to injuries and material damage.

- Instruct the operator that the prescribed inspection and maintenance intervals must be complied with as a minimum requirement.
 - Carry out a regular inspection once a year.
 - Carry out regular maintenance work in line with the findings from the inspection.
- The maintenance interval must not be longer than five years.



Danger!
Risk of injury and death due to improper inspection/maintenance!

Improper performance of inspections and maintenance work can result in leaks or even an explosion.

- Inspection and maintenance work on the boiler must only be carried out by professionally qualified persons.

Any customer service work must be carried out by a professionally qualified person in accordance with the safety, installation and operating provisions for gas-fired units. Professional qualification must be confirmed by a correspondingly recognised organisation or public office.

In addition, BS 6798: 2009 "Specification for the Installation and Maintenance of Gas-fired Boilers with a Maximum Net Nominal Heat Output of 70 kW" contains the following recommendations:

The person who carries out a combustion measurement must be trained in the use of a flue gas measuring instrument and in interpreting the results.

The flue gas measuring instrument used must meet the requirements of BS 7927 or BS-EN50379-3 and must be calibrated in accordance with the requirements of the measuring instrument manufacturer.

Professional qualification can be proven through the successful completion of the relevant ACS standard assessment, which covers the use of portable electronic flue gas

measuring instruments in accordance with BS 7967, part 1 to 4.

- The correct fuel type must be set on the flue gas measuring instrument.

We recommend completing an inspection and maintenance contract with a correspondingly qualified operator or installer.

Inspection

The inspection is intended to determine the actual condition of the boiler and compare it with the target condition. This is done by measuring, checking, observing. You must carry out an inspection of the ecoTEC plus at least once every year. A quick and economic inspection can be performed without having to remove components by requesting data from the DIA system and carrying out simple visual checks.

Service

Maintenance is required in order to eliminate any deviations of the actual condition from the target condition. This is normally done by cleaning, adjusting and, if necessary, replacing individual components that are subject to wear. Based on experience, it is not necessary to carry out annual cleaning, e.g. on heat exchangers, under normal operating conditions. As a competent person, you determine these maintenance intervals and their scope based on the condition of the unit determined during the inspection, but maintenance must be carried out at least every 2 years.

- Carry out all inspection and maintenance work in the order shown in **table 13.2**.



Danger!
Risk of poisoning and burns caused by escaping hot flue gas!

Escaping hot flue gases can cause poisoning and scalding if the boiler is operated in the following condition:

- without a completely installed flue pipe
 - with an open flue pipe
 - with internal leaks and open front casing.
- The boiler must only be operated with the front casing closed and a completely installed and closed flue pipe
 - for initial start-up
 - for test purposes
 - in continuous mode.

13.1.1 General inspection and maintenance instructions

Procuring spare parts

➤ If you require spare parts for servicing or repair work, use only Vaillant genuine spare parts.
The original components of the unit were also certified as part of the CE declaration of conformity. If you do not use certified Vaillant genuine spare parts, this voids the CE conformity of the unit. We therefore strongly recommend that you fit Vaillant genuine spare parts.
You can find information about available Vaillant genuine spare parts from the contact address provided on the reverse of this document.

During an inspection or maintenance procedure, as well as after replacing components in the combustion circuit, the following checks must be performed:

- The boiler has been installed in accordance with the corresponding installation instructions.
 - The condition of the flue gas system and the flue gas seals corresponds to the enclosed instructions for the flue gas system.
 - Visual inspection of the combustion circuit of the boiler and the associated seals.
 - The maximum gas connection pressure (gas flow pressure) corresponds to the information in → **section 9.6.3**.
 - Correctness of the current, water and gas connections.
 - Correctness of the water pressure.
 - Condition of the overall system, in particular the condition of the radiator valves, indications of leaks in the heating installation or dripping water taps.
- Eliminate any faults before continuing.

13.1.2 Safety information



Danger! **Risk of injury and death from electric shock!**

Even when the boiler is switched off, mains voltage is still present at the power connection terminals of the boiler.

- Avoid any contact with the power connection terminals.
- Protect the switch cabinet from water, especially from being splashed.
- Before any work on the boiler, switch off the power supply and secure the boiler against being switched back on accidentally.



For certain inspection and maintenance work, the electrics of the boiler must remain activated; this is specified in the description of the respective maintenance task.

Before starting any inspection and maintenance work, perform the following steps:

- Switch off the main switch.
- Disconnect the boiler from the power supply by
 - removing the mains plug or
 - de-energising the boiler with an isolating device with a contact opening of at least 3 mm (e.g. fuses or mains switches).
- Also check the electrical isolation of the boiler with a measuring instrument.
- Close the gas isolator cock.
- Close the stop valves in the heating flow and return.
- Remove the front casing of the boiler.
- When removing components which carry water, ensure that no water comes into contact with electrical components.

After completing any inspection and maintenance work, perform the following steps:

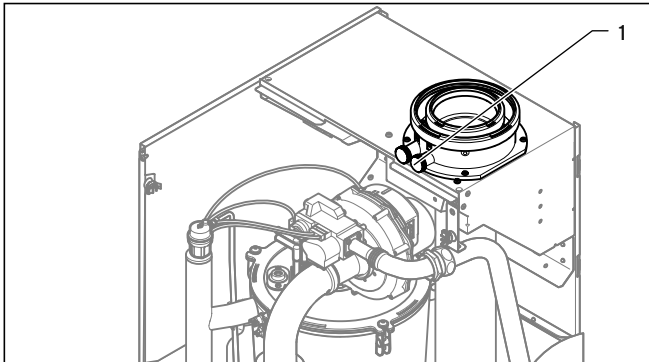
- Only use new seals and O-rings when replacing parts.
- Open the stop valves in the heating flow and return.
- Open the cold water stop valve if necessary.
- Reconnect the boiler to the power mains.
- Switch on the boiler using the on/off switch.
- Fill the heating circuit of the boiler with water up to a pressure of 0.1 and 0.2 MPa (1.0 and 2.0 bar), if necessary.
- If you have topped up the heating water, purge the heating installation (→ **section 9.3.2**).
- Open the gas isolator cock.
- Check the boiler for gas and water leaks.
- If necessary, refill and purge the heating installation again.
- Reattach the front casing of the boiler (→ **section 4.6**).
- Carry out a functional check of the boiler (→ **section 11.5.1 to 11.5.3**).
- Always check the earth connection, the polarity and the resistance with a multimeter following completion of the maintenance or repair work and after replacing electrical components.
- Complete the commissioning checklist that is attached to these instructions.

13 Inspection and maintenance

13.1.3 Checking the CO₂ content

The CO₂ content must be checked/set in the following cases:

- When replacing the gas valve
- If you suspect incorrect combustion.
- At initial start-up
- During any maintenance work
- When replacing the fan or burner
- If there are changes to the gas installation



13.1 Checking the CO₂ content



The boiler is equipped with a flue gas analysis point (1). A suitable flue gas measuring instrument can be used to check the combustion performance of the measuring instrument at this analysis point.

- Remove the front casing (→ section 4.6).
- Start check programme P1 (→ section 11.4).
- Wait at least 5 minutes until the boiler reaches its operating temperature.
- If required, remove the upper casing.
- Measure the CO₂ content at the flue gas analysis point (1). Compare the measured value with the corresponding value in → table 13.1.

Settings	Unit	Natural gas H Tolerance
CO ₂ after 5 minutes full load operation with front casing closed	Vol.-%	9.0 +/- 0.5
CO ₂ after 5 minutes full load operation with front casing removed	Vol.-%	8.8 +/- 0.5
Set for Wobbe Index W ₀	kWh/m ³	15

13.1 Gas default settings

- If all these points meet the requirements, continue in accordance with → section 13.2.
- If one of the flue gas values is above the permissible value in → table 13.1, continue in accordance with the following → section 13.1.4.

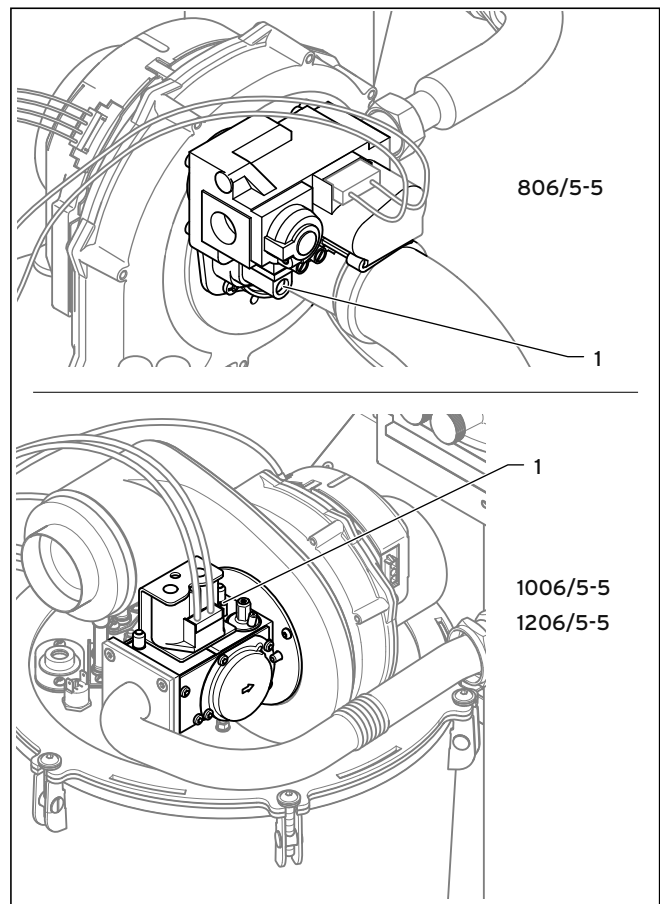
13.1.4 Setting the CO₂ content (or setting the air ratio)



Danger!
Increased risk of poisoning from incorrect setting.

If one of the flue gas values is above the permissible values in → table 13.1:

- Check that the entire flue gas system is in good condition.
- Check that the seals of the combustion system are in good condition.
- Check the gas connection pressure (gas flow pressure).
- Check the gas volume flow.



13.2 Carry out the CO₂ measurement, air index setting

If the flue gas value has to be set, proceed as follows.
The adjusting screw (1) for the air index setting is located under a sealing sticker.

- Break through the sealing sticker.
- Set the CO₂ content (value with front casing removed) by turning the screw (1).



Turn to the left: Increases the CO₂ content
Turn to the right: Decreases the CO₂ content

- Only perform the adjustment in 1/8 turns and wait approximately 1 minute after each adjustment until the value stabilises. For this, always first turn the adjusting screw in and then turn it out again for fine adjustment.
 - The adjusting screw must only slightly poke out of the casing:



On the VU GB 1006/5-5 and VU GB 1206/5-5, the CO₂ content only changes after approx. 1 turn of the adjusting screw (overcoming the adjustment hysteresis).

- Press the "Cancel" selection button once the settings have been made.
- Reattach the front casing (→ **section 4.6**).

13 Inspection and maintenance

13.2 Inspection and maintenance work

The following table shows the inspection and maintenance work that must be carried out at specific intervals.

No.	Work	Inspection (must be performed every year)	Service (regularly, at least every 2 years)
1	Isolate the boiler from the power mains. Check that the plug connections and other connections are seated correctly and correct these if necessary.	X	X
2	Close the gas isolator cock and the service valves.		X
3	Check the flue pipe for leak-tightness and correct seating. Make sure that it is not blocked or damaged and has been installed in accordance with the relevant Installation Manual.	X	X
4	Check the general condition of the boiler. Remove general dirt from the boiler and from the vacuum chamber.	X	X
5	Visually inspect the general condition of the entire heating cell and specifically check for signs of corrosion, soot or other damage. If you notice any damage, carry out maintenance work.	X	X
6	Remove the gas-air mixture unit (burner door with fan and gas valve) (→ section 13.5.1).		X
7	Check all seals in the combustion area. If you see any damage, replace the seals. Replace the burner door seal every time you open the burner door.		X
8	Clean the heat exchanger by flushing it with a water hose from above (→section 13.5.2).		X
9	Check the burner for dirt and clean if necessary.		X
10	Check the condensate siphon in the boiler, clean and top up if necessary.	X	X
11	Check, and if necessary correct, the charge pressure of the expansion vessel.	X	X
12	Reinstall all of the previously removed components, up to and including the gas-air mixture unit.		X
13	Reinstall the gas-air mixture unit. Caution: Replace the seals.		X
14	Replace the ignition and monitoring electrode and the associated seals.		X
15	Motorised flue non-return flaps for cascade operation: Check that the flue non-return flap functions faultlessly. If required, clean the casing from inside and outside, as well as the shut-off disc and the shaft.		X
16	Open the gas isolator cock, reconnect the boiler to the power mains and switch the boiler on.	X	X
17	Open the service valves, fill the boiler/heating installation to 0.1 - 0.2 MPa (1.0 - 2.0 bar) (depending on the static height of the heating installation), start purging programme P.O.		X
18	Check the gas connection pressure (gas flow pressure) (→section 9.6.3) at maximum output. If the gas connection pressure (gas flow pressure) is not within the correct range, carry out maintenance.	X	X
19	Check the CO ₂ content of the boiler and, if necessary, adjust it (→section 13.1.3). Keep a record of this.	X	X
20	Perform a test operation of the boiler and heating installation and purge the system if necessary.	X	X
21	Visually inspect the ignition and burner performance.	X	X
22	Check the CO ₂ content (air ratio) of the product again.	X	X
23	Check the boiler for gas, flue gas, hot water and condensate leaks and repair if necessary.	X	X
24	Close the front casing.	X	X
25	Record the inspection/maintenance work carried out.	X	X
26	Check the quality of the heating water (hardness level) and log the values in a system book. If required, use water treatment to correct the water hardness.	X	X

13.2 Inspection and maintenance steps

13.2.1 Filling the boiler and the heating installation

A description of how to fill the boiler and heating installation is given in **section 9.3.1**.

13.2.2 Draining the boiler

- Switch the boiler off with the on/off button.
- Close the service valves of the boiler.
- Start the check programme P.6.
- Open the drain valves on the service valves.


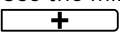
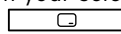
13.2.3 Draining the entire heating installation

- Attach a hose to the draining device on the system.
- Bring the open end of the hose to an appropriate drain point.
- Start check programme P.6 (→ **section 11.4**).
- Make sure that the service valves of the boiler are open.
- Open the drain cock.
- Open the purging valves on the radiators.
Start from the highest radiator and then work from the top to the bottom.
- Once the water has drained off, close the purging valves of the radiators and the drain cock.

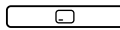
13.3 Using the function menu

You can use the function menu to service the ecoTEC plus as it allows you to control individual components of the heating installation. In addition, the function menu offers a programme for purging the heating circuit and the hot water circuit.

Menu → Installer level → Test programmes → Function menu

- Use the minus button  or the plus button  to go to the components of the heating installation.
- Confirm your selection using the right-hand selection button  ("Select").

Cancelling the function test

- Press the left-hand selection button  ("Cancel") to stop the function test.

You can test the operation of the heating installation components listed below using the self-tests in the function menu.

Display	Test programmes	Action
T.01	Check internal pump	You can switch the internal pump on and off.
T.03	Check fan	You can switch the fan on and off. The fan runs at maximum rotational speed.
T.04	Check cylinder charge pump	You can switch the cylinder charging pump on and off.
T.06	Check external pump	You can switch the external pump on and off.
T.08	Check burner	The boiler starts, carries out the necessary self-test and switches to minimum load. The display shows the status and the temperature in turn (alternatively the pressure). If a fault occurs, the display shows the corresponding fault code.

13.3 Self-tests in the function menu

13.3.1 Testing components

If you have opened the function menu, you can select various self-tests. You can use these self-tests to check the function of the following components of the heating installation or to purge the heating circuit.

You can select the following self-tests:

Test programmes	Action
Check pumps of the pump group	You can switch the pump on and off.
Check fan	You can switch the fan on and off. The fan runs at maximum rotational speed.
Check charging pump	You can switch the cylinder charging pump on and off.
Check external pump	You can switch the external pump on and off.
Check burner	The unit starts, carries out the necessary self-test and switches to minimum load. The display shows the status and the temperature in turn (alternatively the pressure). If a fault occurs, the display shows the corresponding fault code.
End function menu	You can exit the function menu here.
The plain text display shows the current mode. If you do not press any buttons for more than 15 minutes, test mode is ended automatically.	

13.4 Self-tests in the function menu

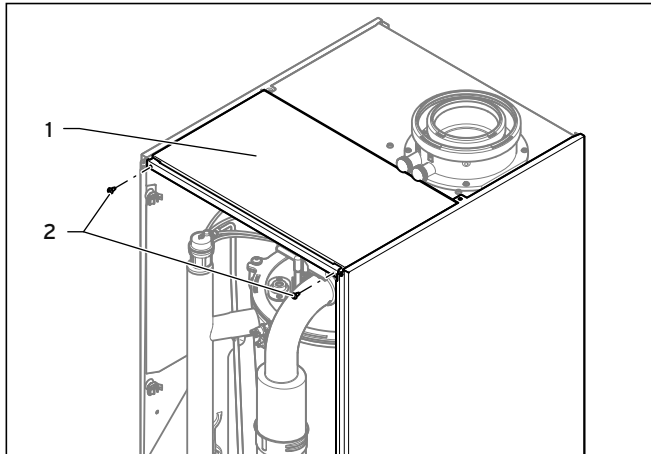
13 Inspection and maintenance

13.3.2 Carrying out electronics self-tests

Menu → Installer level → Test programmes → Electronics self-test

With the electronics self-test, you can test the relays on the PCB.

13.4 Removing/fitting the upper casing



13.3 Removing/fitting the upper casing

To remove the upper casing:

- Unscrew the screws (2).
- Pull out the upper casing (1) towards the front.

To fit the upper casing:

- From above, place the upper casing (2) on the boiler.
- Use the screws (1) to secure the upper casing.

13.5 Carrying out maintenance work

13.5.1 Removing the gas-air mixture unit



Danger!
Risk of being burned or scalded by hot components!

There is a risk of being scalded or burned on the gas-air mixture unit and on all water-carrying components.

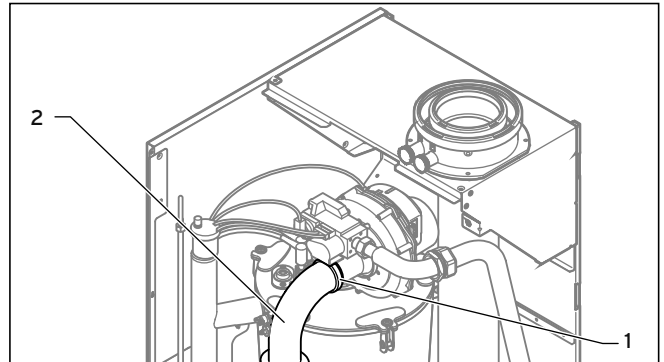
- Only carry out work on these components if they have cooled down.

The gas-air mixture unit consists of four main components:

- Speed-regulated fan
- Air intake pipe
- Gas valve
- Burner

- Switch the boiler off with the on/off button.
- Isolate the boiler from the power mains.
- Close the gas isolator cock on the boiler.
- Close the service valves on the boiler.
- Remove the front casing from the boiler (→ section 4.6).
- Undo the upper screws in the side panels.
- Move the side sections slightly outwards.
- Tilt the front unit cover upwards and pull it forwards.

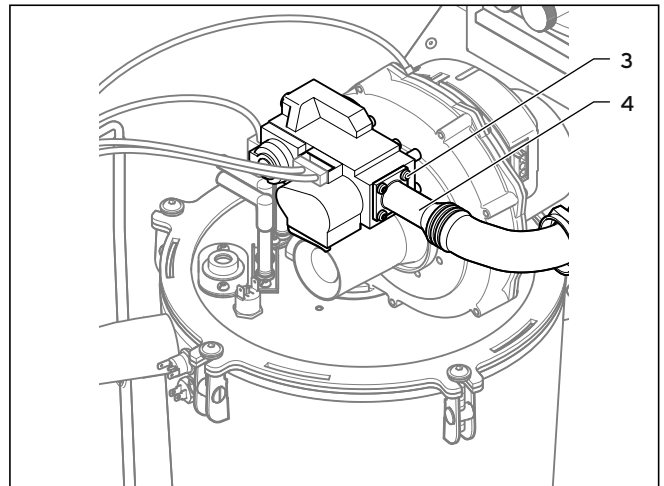
Only on VU GB 806/5 - 5:



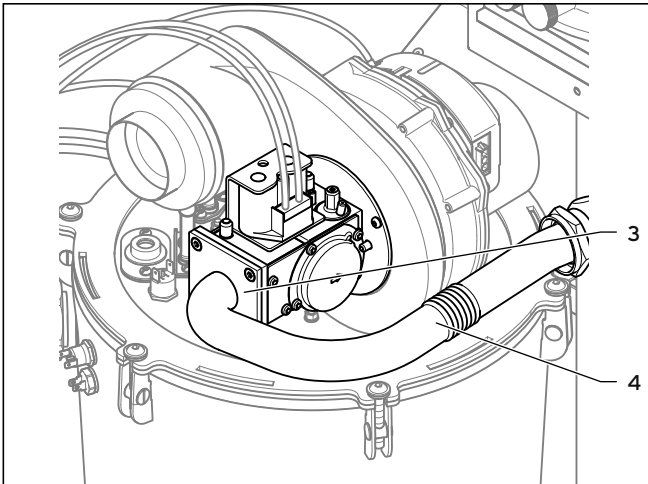
13.4 Remove the air intake pipe (only for VU GB 806/5 - 5)

- Undo the clip (1) on the air intake pipe (2).
- Remove the air intake pipe from the intake port.

For all units:



13.5 Separate the gas pipework (VU GB 806/5 - 5)



13.6 Separate the gas pipework (VU GB 1006/5 - 5 and VU GB 1206/5 - 5)

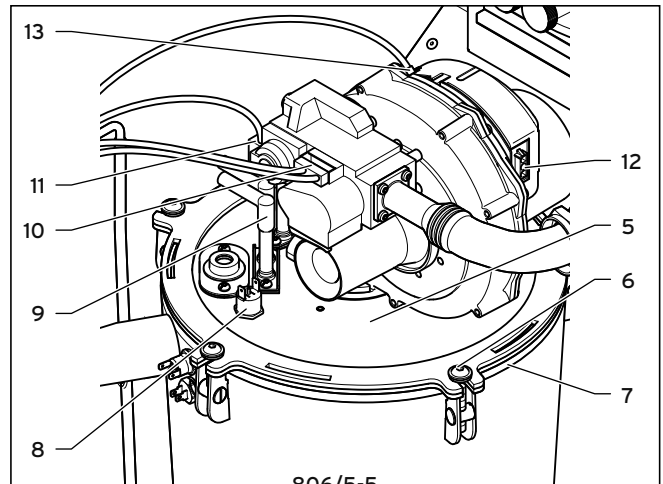
- Undo the four screws on the flange connection (3) to the gas valve.
- Move the gas pipe (4) to the side.



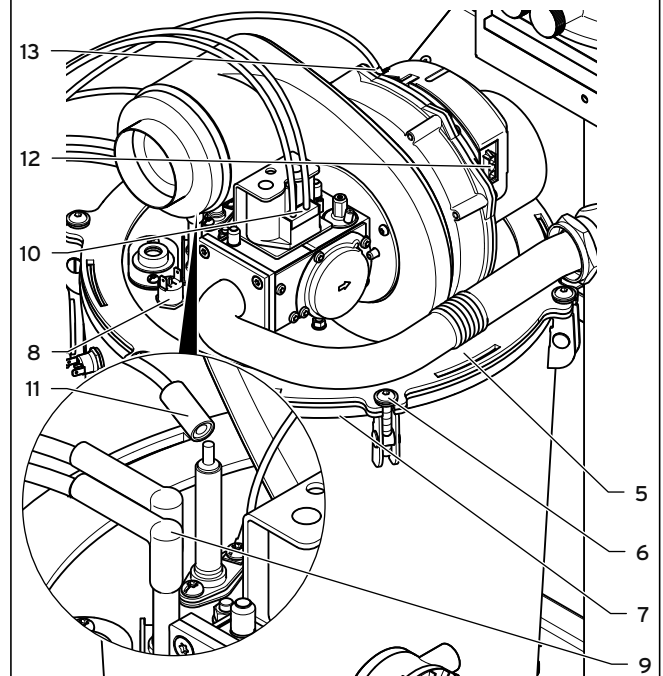
Danger!
Risk of poisoning and fire caused by escaping gas!

The gas pipe can be damaged.

- Ensure that you do not damage the seals on the gas pipe when removing and installing the gas-air mixture unit.



806/5-5



1006/5-5

1206/5-5

13.7 Removing the gas-air mixture unit

- Remove the plug for the ionisation line from the ionisation electrode (11), and remove the plug for the ground connection from the earthing lug.
- Remove the ignition line plug and the ground connection of the ignition electrode (9) from the ignition transformer.



The cable is firmly connected to the ignition electrode.

- Remove the plugs (12 and 13) from the fan motor by pushing in the latching lug.
- Remove the plug from the gas valve (10).

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- Remove the plug from the upper safety cut-out (8).
- Undo the screws (6) on the burner door.
- Remove the complete gas-air mixture unit (5) from the heat exchanger (7).
- Check the burner and the heat exchanger for damage and dirt.

13.5.2 Cleaning the heat exchanger

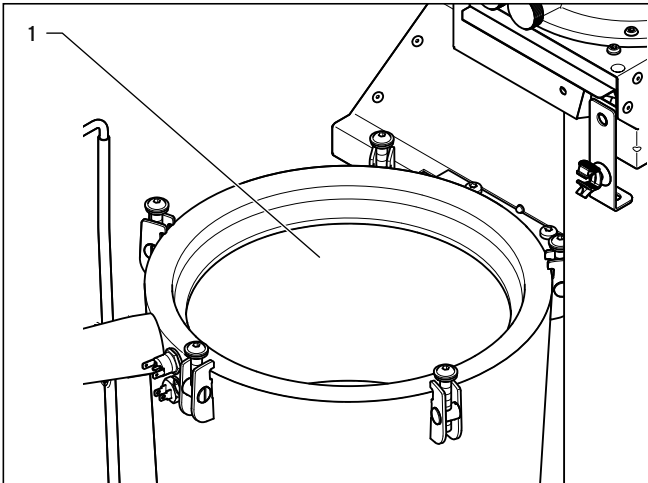


Caution.
Risk of material damage from spraying water.

If you fail to protect the electronics box adequately, water can penetrate the box during cleaning and may damage the electronics.

- Protect the folded down electronics box against sprayed water.

- Remove the gas-air mixture unit (→ **section 13.5.1**).



13.8 Cleaning the heat exchanger (example: VU GB 806/5 - 5)



Caution.
Risk of damage to the heat exchanger.

- You should neither loosen nor tighten the screws (2).

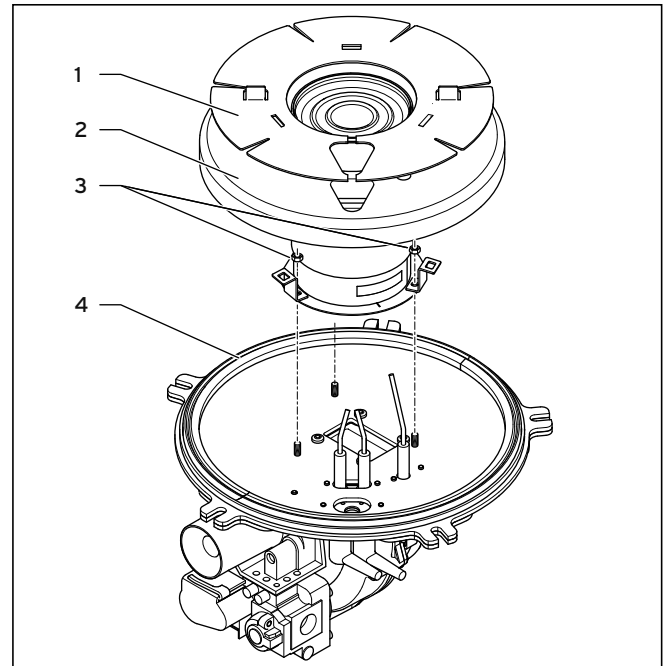
Before flushing, we recommend removing the condensate siphon so that the neutralising unit is not damaged.

- Rinse away any dirt from the burner chamber wall and through the pipes (1) of the heat exchanger using a strong jet of water or use a plastic brush.

The water flows out of the heat exchanger through the drain.

If you have removed the condensate siphon, reinstall it below the boiler after cleaning (→ **section 13.5.5**) so that the heat exchanger is ready for operation again.

13.5.3 Checking the burner

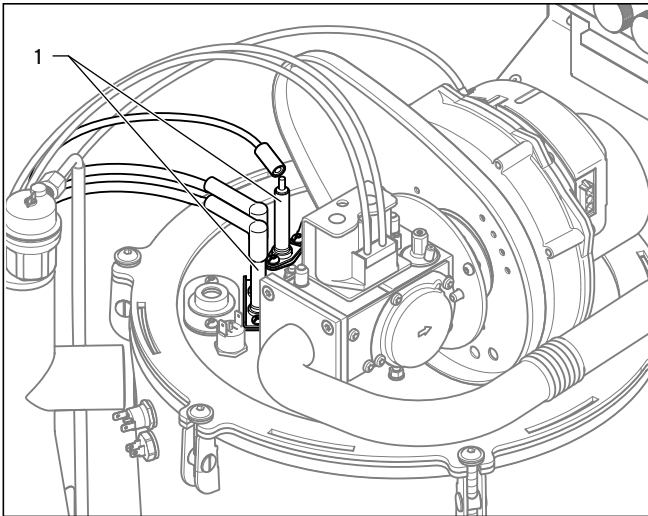


13.9 Check the burner (Example: VU GB 806/5 - 5)

- Check the surface of the burner for damage. If you notice any damage, replace the burner and seal (→ **section 15.4**).
- Check the insulating mat (2) on the burner door. If you notice any signs of damage, replace the insulating mat (→ **section 15.5**).
- Check the burner door seal (4) on the burner door. If you notice any signs of damage, replace the seal. See "Replacing the burner" (→ **section 15.4**).

13.5.4 Replace the ignition and ionisation electrode

We recommend that you replace the ignition and ionisation electrode every 2 years.



13.10 Replacing electrodes

- Remove the electrodes (1) from the burner plate from above.
- Insert the new electrodes with new seals. Tightening torque: 2.8 Nm

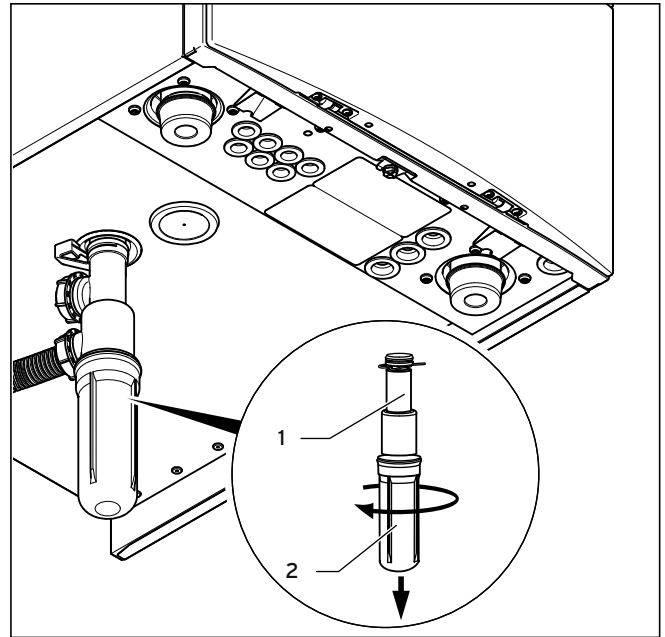


Caution.

Risk of material damage caused by damage to the ignition and ionisation electrodes.

The electrodes could become damaged during installation.

- Fit the new electrodes only after first installing the gas-air mixture unit.



13.11 Cleaning the condensate siphon

- Remove the siphon's lower section (2) by unscrewing it from the condensate siphon (1).
- Flush out the lower section of the siphon with water.
- Fill the lower section of the siphon with water up to about 10 mm below the upper edge.
- Re-fit the lower part of the condensate siphon.
- Check the seal for leak-tightness.

13.5.5 Cleaning the condensate siphon



Danger!

Risk of death caused by improper maintenance!

If you operate the boiler with an empty condensate siphon, flue gas may escape into the room air.

- Top up the condensate siphon after each cleaning session.



Danger!

Risk of personal injury and material damage due to hot flue gases.

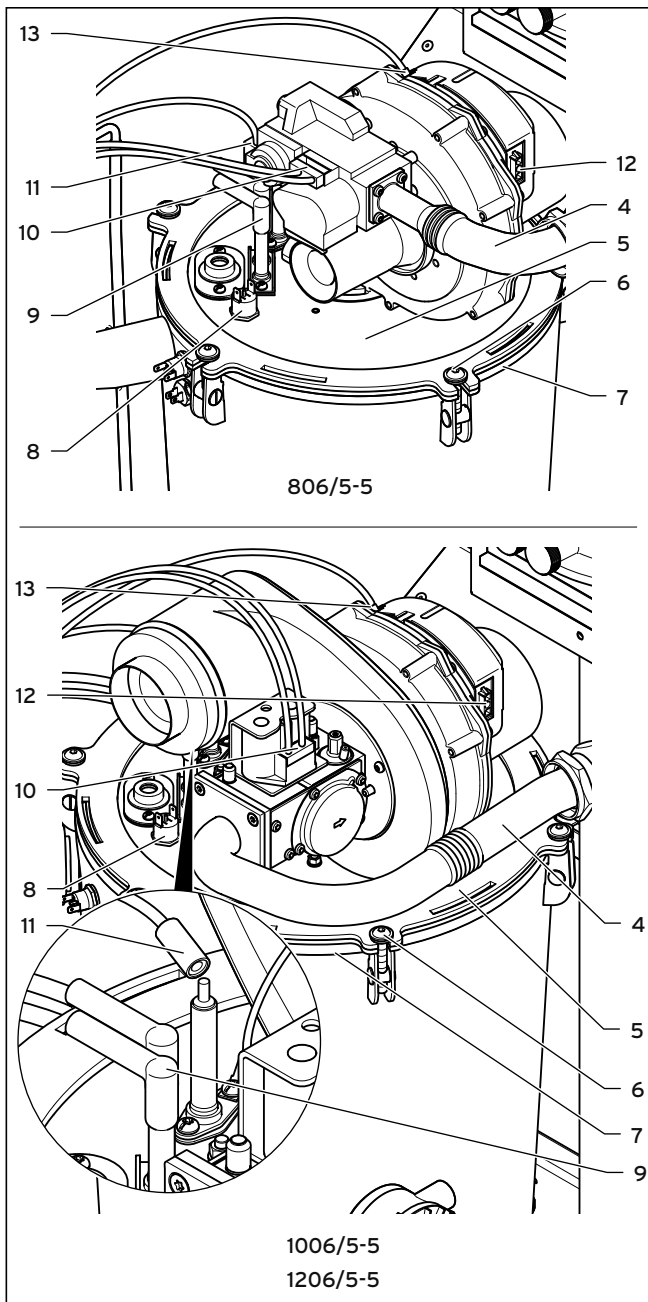
If you do not replace the seal, hot flue gases may escape and cause injuries and material damage.

- Replace the seal each time you open the burner door.
- If the insulating mat on the burner door shows signs of damage, then replace it.

- Replace the seal in the burner door.
- Ensure that the bracket for the insulating mat is fitted properly again after replacement.
- Replace all seals at the sealing point opened during the maintenance work.

13.5.6 Installing the gas-air mixture unit

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13.12 Installing the gas-air mixture unit

- Connect the gas-air mixture unit (5) to the heat exchanger (7).
- Tighten the screws (6) in a cross-wise pattern until the burner door fits closely and uniformly onto the mating surfaces. Tightening torque: 10 Nm
- Connect the plugs of the ignition lines and the ground connection to the ignition electrode (9) on the ignition transformer.
- Connect the plug of the ionisation line to the ionisation electrode (11) and connect the plug of the ground connection to the earthing lug.
- Connect the plug of the safety cut-out to the upper safety cut-out (8).
- Connect the plugs (12 and 13) to the fan motor.

- Connect the plug (10) to the gas valve.
- Connect the gas pipe (4) with a new seal to the gas valve.
Torque (**for the VU GB 806/5-5 only**): 2 Nm
Torque (**for the VU GB 1006/5-5 and VU GB 1206/5-5 only**): 2.8 Nm
- Open the gas isolator cock on the boiler.



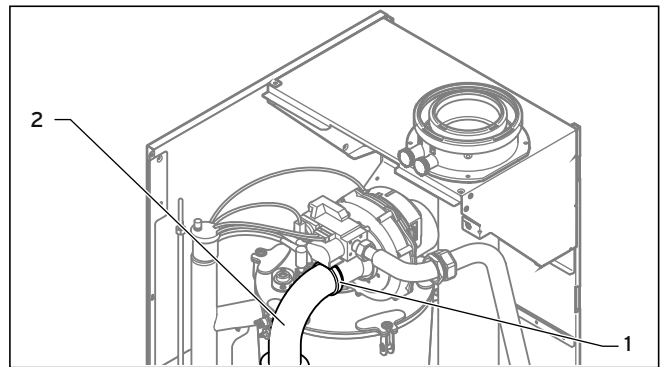
Danger!

Risk of poisoning and fire caused by escaping gas!

Gas can escape through leaks.

- Check the gas tightness at the gas connection using leak detection spray.

For the VU GB 806/5 - 5 only: Installing the air intake pipe



13.13 Installing the air intake pipe (Only for VU GB 806/5 - 5)

- Check that the sealing ring in the air intake pipe (2) is positioned correctly in the seal seat.
- Place the air intake pipe back onto the intake nozzle.
- Secure the air intake pipe with the clip (1) on the intake nozzle.

For all units:

- Close the electronics box.
- Re-establish the connection to the power mains.
- Open the service valves in the heating flow and in the heating return.
- If required, refill the boiler with water to a pressure of between the minimum and the maximum values.

13.5.7 Checking the gas connection pressure (gas flow pressure)

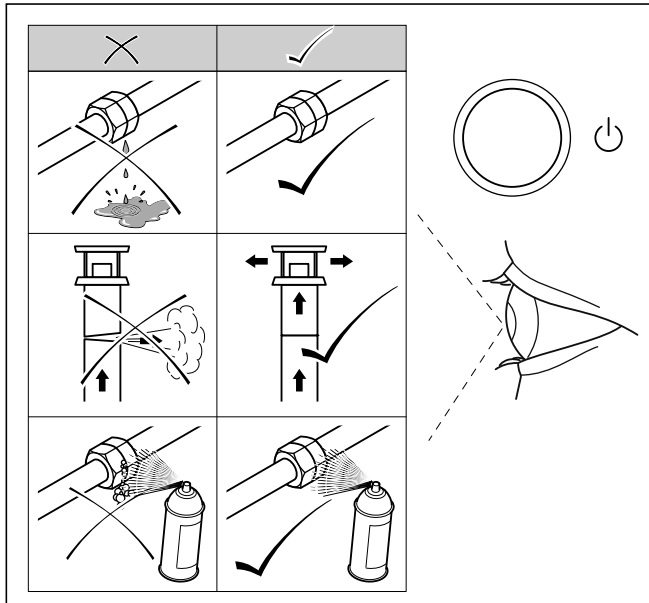
- Check the gas connection pressure (→ **section 9.6.3**).

13.5.8 Checking the CO₂ content

- Check the CO₂ content (**section 13.1.3**).

13.5.9 Checking the boiler

- Commission the boiler in accordance with the relevant operating instructions.



13.14 Leak-tightness test

- Purge the heating installation using check programme P.0 (→ **section 11.4**).
- Check the boiler for gas and water tightness.
- If necessary, refill and purge the heating installation again.
- Check the ignition and that the flame on the burner is burning evenly.
- Attach the front casing of the boiler (→ **section 4.6**).
- Check the flue pipe for correct seating.
- Check the flue pipe for leak-tightness.
- Check the function of the heating (→ **section 11.5.2**).
- Record the inspection/maintenance work carried out in the system book that you leave with the unit's documentation.

14 Troubleshooting

14.1 Contacting Vaillant customer service

- If you contact your Vaillant Customer Service or Vaillant Service partner, then please provide, where possible,
 - the fault code that is displayed (F.xx),
 - the unit status (S xx) that is displayed in the "Live monitor" (→ **section 14.2.1**).

14.2 Performing diagnostics

You can use the function menu to control and test individual components of the boiler in the fault diagnostics.

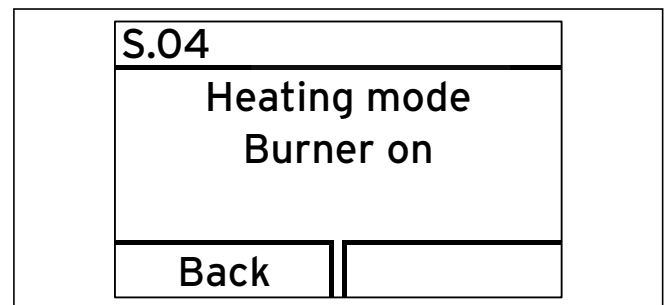
Menu → Installer level → Test programmes → Function menu

- Use the function menu for fault diagnostics (→ **section 13.3**).

14.2.1 Calling up Live monitor (status codes)

Menu → Live monitor

You can call up the boiler status codes in the display which provide information on the current operating condition of the boiler.



14.1 Display views of the status codes


14 Troubleshooting

14.2.2 Overview of status codes

Display	Meaning
Heating mode	
S 00	Heating, no heat demand
S 02	Heating mode pump flow
S 03	Heating mode, ignition
S 04	Heating mode, burner on
S 05	Heating mode, pump/fan overrun
S 06	Heating mode, fan overrun
S 07	Heating mode, pump overrun
S 08	Heating, remaining locking time in xx minutes
S 09	Heating mode measuring programme
Special cases	
S 30	Room thermostat is blocking heating mode
S 31	Summer mode active or no heat requirement from eBUS controller
S 32	Operation block function due to different fan speed
S 34	Frost protection mode active
S 36	Target value of the eBUS controller is < 20 °C and is blocking heating mode
S 37	Fan waiting period: Fan failure in operation
S 39	Contact thermostat/"burner off contact" has responded
S 40	Comfort protection mode is active: Unit running with limited heating comfort
S 41	Water pressure > 0.2 MPa (2 bar)
S 42	Flue non-return flap return signal blocks burner operation (only in connection with VR40 accessory) or condensate pump faulty, heat requirement is blocked
S 53	Unit is within the waiting period of the modulation block/operation block function due to low water pressure (flow-return spread too large)
S 54	Unit is within the waiting period of the operation blocking function as a result of low water pressure (temperature gradient)
S 96	Return sensor test running, heating demands are blocked
S 97	Water pressure sensor test running, heating demands are blocked
S 98	Supply/return sensor test running, heating demands are blocked

14.1 Overview of status codes

14.2.3 Service messages

If the  "open-end spanner" maintenance symbol appears in the display, there is a service message. The maintenance symbol appears if you have set a maintenance interval, for example, (→ **section 12.1.6**) and it has elapsed. The boiler is not in fault mode but continues to operate.

To obtain more information about the service message:

- Call up the "Live monitor" (→ **section 14.2.1**).

If status code S.40 is displayed as well as the maintenance symbol, the boiler is in Comfort protection mode. This means that the boiler continues to operate with restricted comfort after it has detected a fault (e.g. because of a severe storm).

- In this case, read out the fault memory in order to determine whether a boiler component is defective (→ **section 14.2.6**).

If no fault message is present, the boiler will automatically switch back to normal operating mode after a certain time. Comfort protection mode may then have been triggered by a severe storm, for example.

14.2.4 Calling up diagnostics levels

Menu → Installer level → Diagnostics menu

You can use the diagnostics menu to inspect parameters and modify certain parameters. An overview of all diagnostics codes can be found in → **table 12.1**.

14.2.5 Overview of diagnostics codes at installer level

Display	Meaning	Display value/adjustable value
D.000	Heating partial load	Adjustable heating partial load in kW (Factory setting: auto: Unit automatically adjusts max. partial load to current system demand)
D.001	Pump overrun for heating mode	2 - 60 minutes (factory setting: 5)
D.002	Max. burner anti-cycling time heating at 20 °C flow temperature	2 - 60 minutes (factory setting: 20)
D.005	Flow temperature target value (or return target value)	In °C, max. of the value set in D.071, limited by an eBUS controller if connected
D.006	Hot water temperature target value	35 to 65 °C
D.007	Warm start temperature target value	40 to 65 °C
D.010	Heating pump status of the pump group	1 = on, 0 = off
D.011	Status of external heating pump	1 to 100 = on, 0 = off
D.014	Target value for pump speed	Heating circuit pump target value in % 0 = auto (default setting) 1 = 53 2 = 60 3 = 70 4 = 85 5 = 100
D.016	Room thermostat 24 V DC at terminal 3'-4' (only NL)	0 = Room thermostat open (no heating mode) 1 = Room thermostat closed (heating mode)
D.017	Heating flow/return regulation changeover	0 = flow, 1 = return (default setting: 0)
D.018	Pump operating mode setting	1 = Comfort (continuously operating pump) 3 = Eco (intermittently operating pump, default setting)
D.022	Hot water demand via C1/C2, internal hot water control system	1 = on, 0 = off
D.023	Summer/winter operating mode (heating on/off)	1 = Heating on, 0 = Heating off (summer mode)
D.025	Hot water generation enabled by eBUS controller	1 = Yes, 0 = No
D.027	Switching of relay 1 on the "2 in 7" multi-functional module VR 40	1 = Circulation pump (default setting) 2 = Ext. pump 3 = Charging pump 4 = Extractor hood 5 = Ext. solenoid valve 6 = Ext. error message 7 = Not active 8 = Remote control eBUS (not active) 9 = Anti-legionella pump (not active)
D.028	Switch of relay 2 on the "2 from 7" multi-functional module VR 40	1 = Circulation pump 2 = Ext. pump (factory setting) 3 = Charging pump 4 = Extractor hood 5 = Ext. solenoid valve 6 = Ext. error message 7 = Not active 8 = Remote control eBUS (not active) 9 = Anti-legionella pump (not active)

14.2 Diagnostics codes at installer level

14 Troubleshooting

Display	Meaning	Display value/adjustable value
D.033	Fan speed target value	In rpm
D.034	Fan speed actual value	In rpm
D.039	Solar feed temperature	Actual value in °C
D.040	Flow temperature	Actual value in °C
D.041	Return temperature	Actual value in °C
D.044	digitalised ionisation voltage	Display field 0 to 102, > 80 no flame < 40 good flame
D.046	Pump type	0 = Relay with disable facility (default setting) 1 = PWM with disable facility
D.047	Outside temperature (with weather-controlled Vaillant controller)	Actual value in °C
D.050	Offset for minimum speed	Adjustment range in rpm: 0 to 3000 (factory set nominal value)
D.051	Offset for maximum speed	Adjustment range in rpm: - 990 to 0 (factory set nominal value)
D.060	Number of temperature limiter shutdowns	Number
D.061	Number of ignition device cutoffs	Number of unsuccessful ignitions in the last attempt
D.064	Average ignition time	In seconds
D.065	Maximum ignition time	In seconds
D.067	Remaining burner anti-cycling time	In minutes
D.068	Unsuccessful ignitions at 1st attempt	Number
D.069	Unsuccessful ignitions at 2nd attempt	Number
D.071	Target value maximum heating flow temperature	Adjustment range in °C: 40 to 85 (factory setting: 75)
D.072	Internal pump overrun after	Adjustment range in min: 0 to 10 (default setting: 2)
D.076	UNit variant (display)(device specific number)	82 = VU GB 806/5-5 81 = VU GB 1006/5-5 80 = VU GB 1206/5-5
D.077	Partial load for cylinder charging	in kW
D.080	Operating hours, heating	In hours (h)
D.081	Operating hours, hot water generation	In hours (h)
D.082	Number of burner start-ups in heating mode	Number
D.083	Number of burner start-ups in hot water mode	Number
D.084	Maintenance indicator: Number of hours until the next maintenance	Adjustment range: 0 to 3010 h and "-" for deactivated (Factory setting: "-")
D.090	Status of digital controller	1 = Recognised, 0 = Not recognised
D.091	Status DCF with external sensor connected	0 = No reception, 1 = Reception, 2 = Synchronised, 3 = Valid
D.093	DSN unit variant setting	Adjustment range: 0 to 99
D.094	Delete fault history	1 = Delete fault list
D.095	Software version eBUS components	1. PCB 2. Display 4. VR34
D.096	Factory setting	1 = Reset all adjustable parameters to factory setting

13.2 Diagnostics codes at Installer level (continued)

14.2.6 Reading fault codes

If a fault develops in the boiler, the display shows a fault code F.xx.

A plain text display explains the displayed fault code.

Example F.10: "Short circuit in flow sensor".

Fault codes have priority over all other displays. If a fault occurs, the display no longer shows the current heating flow temperature of the heating installation.

If multiple faults occur at the same time, the display shows the corresponding fault codes for two seconds each in sequence.

- Remedy the fault.
- To restart the boiler, press the fault clearance key
(→ **Operating instructions**).
- If you are unable to remedy the fault and the fault reoccurs despite several fault clearance attempts, contact Vaillant Customer Service.

14.2.7 Querying the fault memory


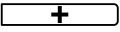
Menu → Installer level → Fault list

The boiler has a fault memory.

You can use this to query the last ten faults that occurred in chronological order. If a DCF sensor is connected, the date on which the fault occurred will also be displayed.


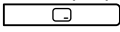
The display shows:

- the number of faults that have occurred
- the fault currently selected with fault number F.xx.
- a plain text display explaining the fault

- Use the minus button  or the plus button  to view the last ten faults.

14.2.8 Resetting the fault memory

You can delete the entire fault list.

- Press the right-hand selection button  ("Delete").
- Confirm the deletion of the fault memory by pressing the right-hand selection button again  ("OK").

14 Troubleshooting

14.2.9 Overview of fault codes

Code	Meaning	Cause
F.00	Flow temperature sensor interruption	NTC plug not plugged in or has come loose, multiple plug on the PCB not plugged in correctly, interruption in cable harness, NTC defective
F.01	Return temperature sensor interruption	NTC plug not plugged in or has come loose, multiple plug on the PCB not plugged in correctly, interruption in cable harness, NTC defective
F.10	Short circuit, flow sensor	Sensor plug has a short to the casing, short-circuit in cable harness, sensor faulty
F.11	Short circuit, return sensor	Sensor plug has a short to the casing, short-circuit in cable harness, sensor faulty
F.20	Temperature safety switch-off	Earth connection of cable harness to boiler not correct, when the burner cover safety cut-out triggers: burner door seal or burner isolation defective. When the flow safety cut-out triggers: pump fault
F.22	Low water pressure safety switch-off	No or too little water in the boiler, water pressure sensor defective, cable to pump or water pressure sensor loose/not connected/defective
F.23	Safety switch-off: Temperature difference too great	Pump blocked, insufficient pump output, air in boiler, flow and return NTC interchanged
F.24	Safety switch-off: Temperature rise too fast	Pump blocked, poor pump performance, air in boiler, system pressure too low, non-return valve blocked/incorrectly installed
F.25	Safety switch-off: Flue gas temperature too high	Break in plug connection for optional flue gas safety temperature limiter (safety cut-out), break in cable harness
F.27	Safety switch-off: Flame simulation	Moisture on the electronics, electronics (flame monitor) defective, gas solenoid valve leaking
F.28	Failure during start-up: Ignition unsuccessful	Gas meter defective or gas pressure monitor has been triggered, air in gas, gas connection pressure (gas flow pressure) too low, Thermal isolator device (TAE) has been triggered, condensate duct blocked, incorrect gas restrictor, incorrect ET gas valve, failure at gas valve, multiple plug on PCB incorrectly plugged in, break in cable harness, ignition system (ignition transformer, ignition cable, ignition plug, ignition electrode) defective, ionisation current interrupted (cable, electrode), incorrect earthing of boiler, electronics defective
F.29	Failure during operation: Re-ignition unsuccessful	Gas supply temporarily stopped, flue gas recirculation, condensate duct blocked, faulty earthing of boiler, ignition transformer has spark failure
F.32	Fan fault	Plug on fan not correctly plugged in, multiple plug on PCB not correctly plugged in, break in cable harness, fan blocked, Hall sensor defective, electronics defective
F.34	Safety switch-off: pressure monitoring	Flue gas pressure cartridge: cable break, blocked flue gas route Water pressure switch: hydraulic leak, air in heating circuit
F.35	Flue pipe fault	Flue pipe blocked
F.49	eBUS fault	Short circuit on eBUS, eBUS overload or two power supplies with different polarities on the eBUS
F.61	Fault: Gas valve regulation	- Short circuit/short to earth in cable harness for the gas valve - Gas valve defective (coils shorted to earth) - Electronics defective
F.62	Fault: Gas valve switch-off delay	- Delayed shutdown of gas valve - Delayed extinguishing of flame signal - Gas valve leaking - Electronics defective
F.63	EEPROM fault	Electronics defective
F.64	Electronics/sensor fault	Flow or return NTC short circuited, electronics defective
F.65	Electronic temperature fault	Electronics overheating due to external influences, electronics defective
F.67	Electronics/flame fault	Implausible flame signal, electronics defective
F.70	Invalid device code	Spare parts case: Display and PCB replaced at the same time and unit variant not reset

14.3 Fault codes

Code	Meaning	Cause
F.73	Water pressure sensor signal in the wrong range (too low)	Interruption/short circuit of water pressure sensor, interruption/short circuit to GND in supply line to water pressure sensor or water pressure sensor defective
F.74	Water pressure sensor signal outside correct range (too high)	Line to water pressure sensor has short-circuited at 5 V/24 V or internal fault in water pressure sensor
F.75	Fault, no pressure change detection when starting pump	Water pressure sensor and/or pump defective, air in heating installation, too little water in boiler; check adjustable bypass, connect external diaphragm expansion vessel to the return
F.76	Overheating protection on primary heat exchanger has responded	Cable or cable connections for safety fuse in primary heat exchanger or primary heat exchanger defective
F.77	Flue non-return flap/condensate pump fault	No response from flue non-return flap or condensate pump defective
con	No communication with the PCB	Communication fault between display and PCB in the electronics box

13.3 Fault codes (continued)

14.3 Using the function menu

To remedy faults in the boiler, you can use the function menu to control and check individual components of the heating installation (→ **section 13.3**).

14.4 Running check programmes

By activating various check programmes, you can trigger special functions on the boiler (→ **table 11.1**). The display shows which check programme you have chosen.

- Read how to start the check programmes in **section 11.4**.

14.5 Resetting parameters to factory settings

As well as the option to manually reset individual parameters to the factory settings specified in → **table 12.1**, you can also reset all parameters at once.

- Set the value of the diagnostics code parameter **D.096** to "1" (→ **section 12.1**).

You have now reset all parameters to factory settings.

15 Replacing components

15 Replacing components

The work described in this section must only be carried out by a competent person.

➤ Only use genuine Vaillant spare parts for repairs. You can find information about available Vaillant genuine spare parts from the contact address provided on the reverse of this document.

15.1 Preparing for and completing replacement work



Danger!

Risk of death from electric shock!

Mains connection terminals L and N remain live even if the continuous voltage on/off switch is turned off.

- Before carrying out maintenance work on the boiler, switch the boiler off using the on/off button.
- Disconnect the boiler from the power mains by de-energising the boiler using a partition with a contact opening of at least 3 mm (e.g. fuses or power switches).



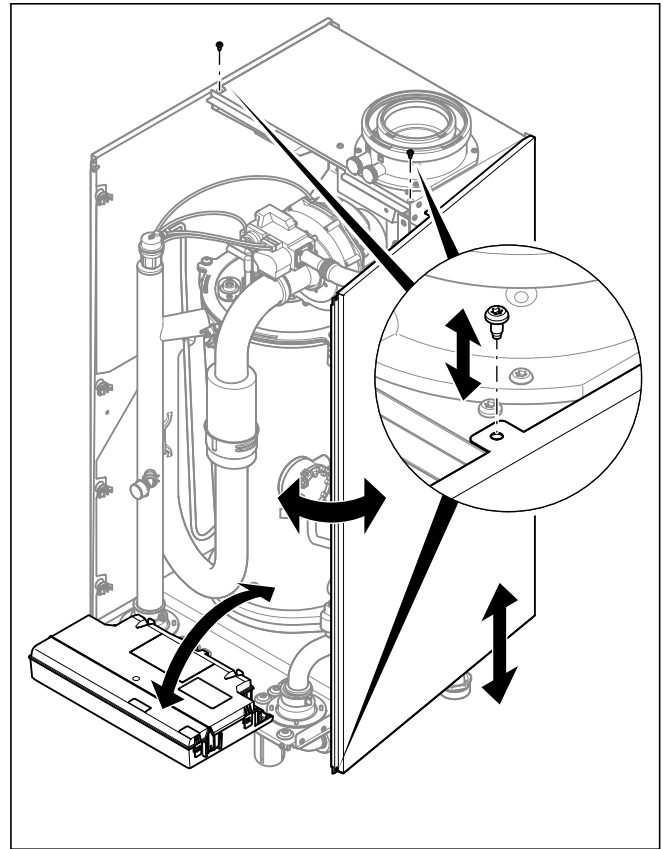
When carrying out any repair to the boiler, make sure that you observe the following instructions for your own safety and to avoid material damage to the boiler.

- Switch off the boiler.
- Isolate the boiler from the power mains.
- Remove the front casing (→ **section 4.6**).
- Close the gas isolator cock.
- Close the service valves in the heating flow and in the heating return.
- Close the service valve in the cold water pipe.
- Drain the boiler if you want to replace components that carry water (→ **section 13.2.2**).
- Make sure that water does not drip on live components (e.g. the electronics box).
- Use only new seals and O-rings.

Completing replacement work

- Check the boiler for gas tightness.
- Reattach the front casing (→ **section 4.6**).
- Carry out a function test (→ **section 11.5.1 to 11.5.3**).

15.2 Removing/fitting the side section (if required)



15.1 Removing/installing the side section



Caution

Risk of material damage caused by mechanical deformation.

Removing **both** side sections may cause mechanical distortion in the product, which may cause damage to the piping, for example, and potentially result in leaks.

- Always only remove **one** side section - never both side sections at the same time.

To remove one side section:

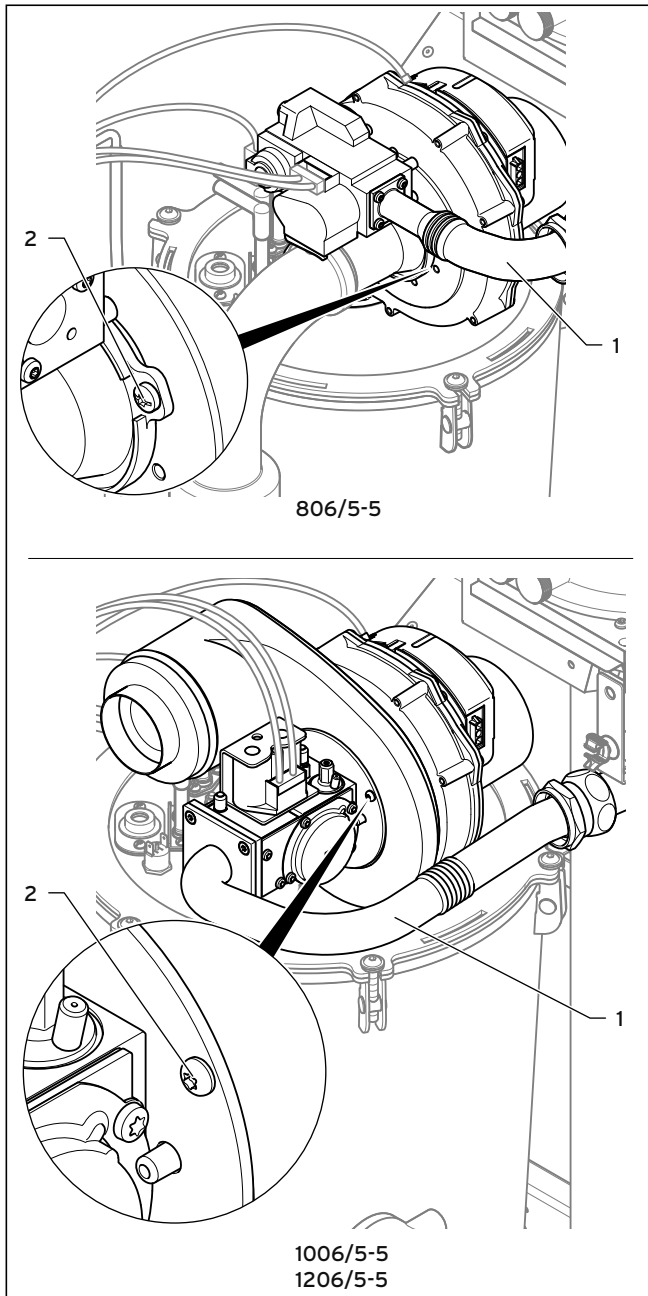
- Tilt the electronics box forward.
- Remove the upper casing (→ **section 13.4**).
- Hold on to the side section so that it cannot fall, and unscrew the lower front and upper central screws from the side section.
- Tilt the side section slightly to the side and pull it out towards the front.

To fit the side section:

- Push the side section into the bracket. When doing so, ensure that all straps on the side panel engage with the rear back wall in order to prevent leaks.

- Slide the side section to the rear.
- Secure the side section using two screws in the front lower area and in the upper central area.
- Fit the upper casing (→ **section 13.4**).
- Fold up the electronics box.

15.3 Replacing the gas valve



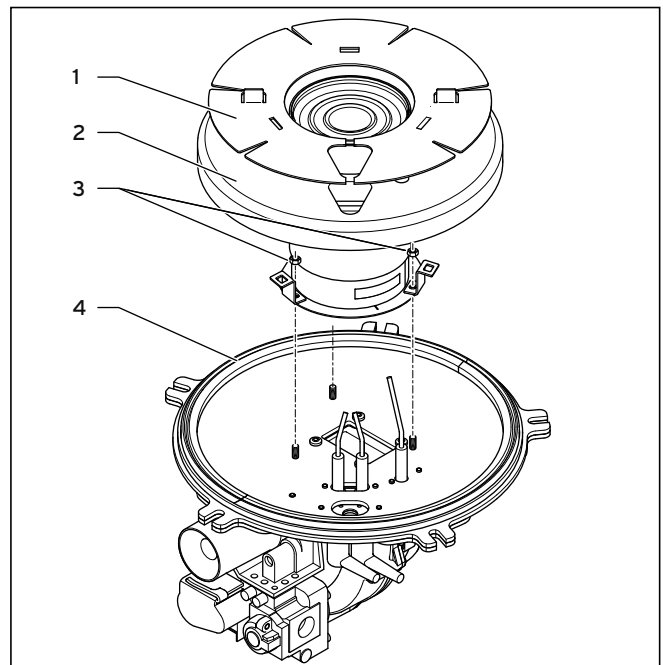
15.2 Replacing the gas valve

- Remove the gas pipe (1) from the gas valve.
- Unscrew the screws (2) from the fan and remove the gas valve from the fan.
- Replace the defective component.

- Fit the new gas valve in the same position on the fan as before. Use new seals for this.
- Tighten the screws (1) in a cross-wise pattern.
Torque (**only for VU GB 806/5-5 and VU GB 1006/5-5**): 6 Nm
Torque (**only for VU GB 1206/5-5**): 10 Nm
- Connect the gas pipe (1) with a new seal to the gas valve.
Torque (**only for VU GB 806/5-5**): 2 Nm
Torque (**only for VU GB 1006/5-5 and VU GB 1206/5-5**): 2.8 Nm
- After installing the new gas valve, carry out a leak-tightness test (check product function and tightness) (→ **section 13.5.9**) and a gas ratio setting (→ **section 13.1.4**).

15.4 Replacing the burner

- Remove the gas-air mixture unit (→ **section 13.5.1**).



15.3 Replace the burner (example: VU GB 806/5 - 5)

- Remove the ignition and monitoring electrode.
- Remove the seal (4) from the burner door.
- Turn the insulation protection plate (1) to remove it.
- Remove the insulating mat (2).
- Loosen the nuts (3) on the burner.
VU GB 806/5-5: three nuts
VU GB 1006/5-5 and VU GB 1206/5-5: four nuts
- **On the VU GB 1006/5-5 and VU GB 1206/5-5 only:**
Use a suitable socket (with extension) to ensure that the burner mat does not become damaged. You must not use burners that have a damaged mat.
- Remove the burner. When doing so, hold the fan and the burner door securely.
- Fit the new burner with a new seal.

15 Replacing components

- **On the VU GB 806/5-5 only:** Use the three nuts to secure the burner and the bracket for the insulation protection plate. Tightening torque: 4 Nm
- **On the VU GB 1006/5-5 and VU GB 1206/5-5 only:** First, use two nuts to secure the burner. Tightening torque: 4 Nm
- **On the VU GB 1006/5-5 and VU GB 1206/5-5 only:** Use the four remaining nuts to secure the burner and the bracket for the insulation protection plate. Tightening torque: 4 Nm
- When installing the nuts, ensure that the openings in the insulation protection plate for ignition and monitoring electrodes lie on top of the corresponding bolts in the burner door.
- Install the insulating mat. Ensure that the insulating mat lies against the burner door.
- Install the insulation protection plate by turning the bayonet fitting until it clicks into place.
- Install the ignition and monitoring electrodes. Use new seals for this. Tightening torque: 2.8 Nm
- Install the gas-air mixture unit (→ **section 13.5.6**).
- Check that the product functions correctly and check the leak-tightness (→ **section 13.5.9**).

15.5 Replacing insulating mats

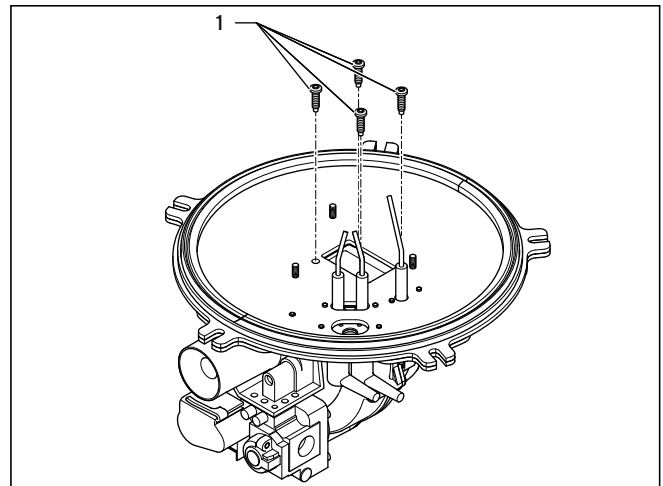
If the safety cut-out on the burner door has been triggered, the insulating mat between the burner door and burner room may be damaged.

- Check and replace the insulating mat.

To replace the insulating mat, proceed in the same way as when removing the burner (→ **section 15.4**). It is not necessary to remove the burner.

15.6 Replacing the fan

- Remove the gas-air mixture unit (→ **section 13.5.1**).
- Remove the burner (→ **section 15.4**).

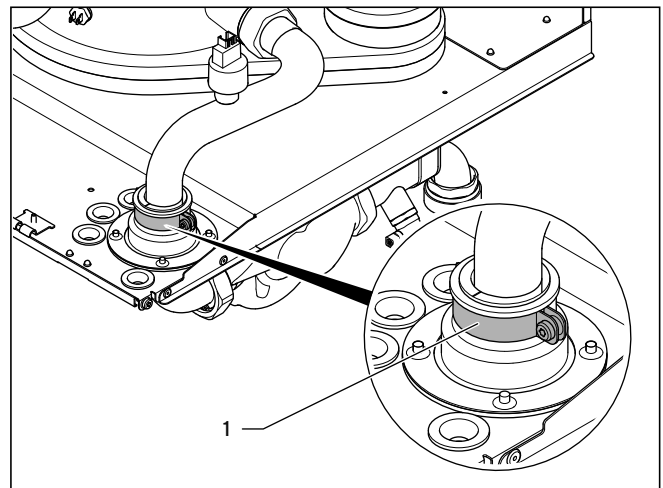


15.4 Replacing the fan

- Unscrew the four screws (1) from the fan.
- Install a new fan and burner in the same position as before.

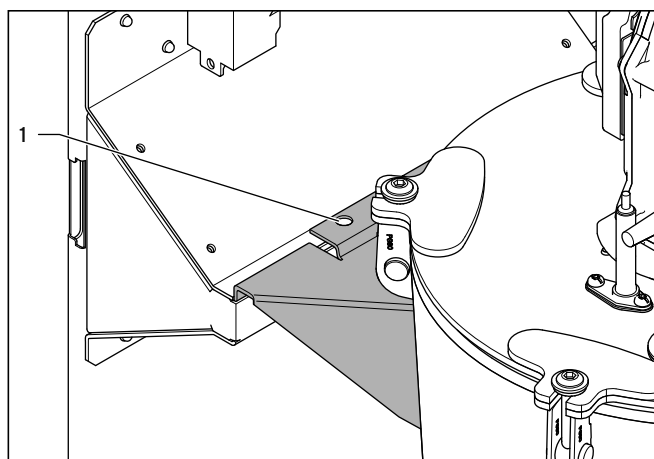
15.7 Replacing the heat exchanger

- Drain the boiler (→ **section 13.2.2**).
- Remove the gas-air mixture unit (→ **section 13.5.1**).
- Unscrew the flow and return line in the front area of the underside of the boiler.



15.5 Loosen the clamps on the flow and return pipes

- Loosen the clamps (1) on the sealing collars of the flow and return pipes in the base area.



15.6 Loosen the locking plate

- On the heat exchanger upper bracket on the back wall, loosen the locking plate (1).
- Lift the heat exchanger out of its bracket. The pipes can be used as handles for this.
- Install the new heat exchanger in reverse order.
- Install the gas-air mixture unit (→ **section 13.5.6**).
- Fill and purge the boiler and, if necessary, the heating installation.

15.8 Replacing the PCB and/or the display



Danger!

Risk of death from electric shock!

Mains connection terminals L and N remain live even if the continuous voltage on/off switch is turned off.

- Before carrying out any repair work on the boiler, switch off the on/off switch.
- Disconnect the boiler from the power mains by de-energising the boiler using a partition with a contact opening of at least 3 mm (e.g. fuses or power switches).



Caution.

Risk of material damage caused by incorrect repairs.

Using an incorrect replacement display can cause damage to the electronics.

- Before replacing, check that the correct replacement display is available.
- **Never** use another replacement display.

15.8.1 Replacing either the display or the PCB

- Replace the PCB or display according to the assembly and installation instructions supplied.

If you are replacing only one component, the set parameters are transferred automatically. By switching on the boiler, the new component takes over the previously set parameters from the unreplaced component.

15.8.2 Replacing the PCB and the display at the same time

- Replace the PCB and display according to the assembly and installation instructions supplied.

If you are replacing both components at the same time, the product switches directly to the menu to select the language after switching on. The default language setting is English.

- Select the required language.
- Confirm your setting with (OK).

You are automatically taken to **D.093** to set the device specific number.

- Select the correct value for the relevant product type in accordance with the following table.

Unit	Number of the unit variant
VU GB 806/5-5 ecoTEC plus	82
VU GB 1006/5-5 ecoTEC plus	81
VU GB 1206/5-5 ecoTEC plus	80

15.1 Numbers of the unit variants

- Confirm your setting.

The electronics are now set to the unit type and the parameters of all adjustable diagnostics codes are set to default settings.

The display automatically restarts with the installation assistant.

- Make the system-specific settings (→ **section 12**).

15.9 Ending repairs

- After completing the work, perform a gas tightness check and a function check (→ **section 13.5.9**).

16 Decommissioning

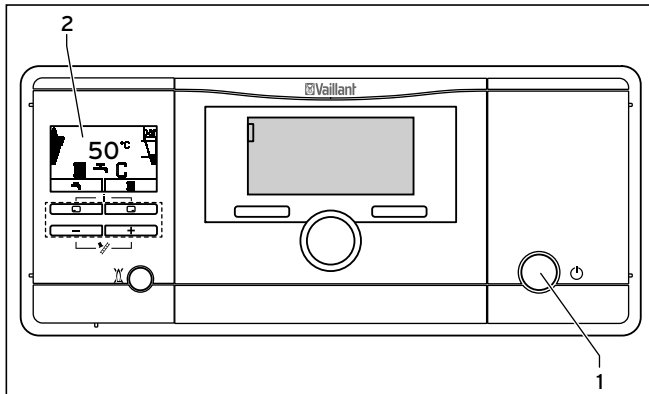
16.1 Temporarily shutting down the boiler



Caution.
Risk of frost damage due to incorrect decommissioning.

If you switch off the boiler using the on/off switch or disconnect it from the power mains, this can cause frost damage to the heating installation.

- Only shut down the boiler fully if the heating installation is otherwise protected from frost.
- Drain the heating installation fully.



16.1 Switching off the boiler

- Close the gas isolator cock.
 - Close the cold water stop valve.
 - Drain the heating installation fully (→ **section 13.2.3**).
 - Press the on/off switch (1).
- The display (2) goes off.

16.2 Permanently decommissioning the boiler

- Close the gas isolator cock.
 - Close the cold water stop valve.
 - Drain the heating installation fully (→ **section 13.2.3**).
 - Press the on/off switch (1).
- The display (2) goes off.
- Isolate the boiler from the power mains.
 - Secure the gas line against leaks.
 - Dispose of the boiler correctly (→ **section 16.3**).

16.3 Disposing of the boiler

The Vaillant ecoTEC plus boiler consists primarily of materials that can be recycled.

The boiler and its accessories must not be disposed of with household waste.

- Make sure that the boiler and any existing accessories are disposed of properly.

17 Vaillant Commercial Service

To ensure efficient and reliable operation of your boiler it is recommended that regular servicing is carried out by your service provider.

Vaillant Applied System Sales:

Vaillant Ltd. Nottingham Road, Belper, Derbyshire, DE56 1JT

Commercial Training

Telephone: 0845 601 8885
Email: training@vaillant.co.uk

Commercial After Sales Service

Telephone: 0870 850 3072 (Mon-Fri 8:30 - 17:30)
Technical Help: 1634 292 392 (Mon-Fri 8:30 - 17:30)
Fax: 01773 525 946
Email: aftersales@vaillant.co.uk

18 Technical data

ecoTEC plus	Unit	ecoTEC plus VU GB 806/5-5	ecoTEC plus VU GB 1006/5-5	ecoTEC plus VU GB 1206/5-5
Nominal heat output range P at 80/60 °C	kW	14.9 - 74.7	18.7 - 93.3	22.4 - 112
Nominal heat output range P at 60/40 °C	kW	16 - 80	20 - 100	24 - 120
Nominal heat output range P at 50/30 °C	kW	16.5 - 82.3	20.74 - 102.8	24.7 - 123.4
Nominal rated efficiency (stationary) at 80/60 °C	%	98		
Nominal rated efficiency (stationary) at 60/40 °C	%	105		
Nominal rated efficiency (stationary) at 50/30 °C	%	108		
Standard degree of utilisation at 75/60 °C in accordance with DIN 4702-8	%	106		
Standard degree of utilisation at 40/30 °C in accordance with DIN 4702-8	%	110		
Maximum heat input during heating mode ¹⁾	kW	76.2	95.2	114.3
Maximum heat input during cylinder charging ¹⁾	kW	76.2	95.2	114.3
Minimum heat input ¹⁾	kW	15.2	19.2	22.9
Heating				
Max. flow temperature (default setting: 75 °C)	°C	85		
Permissible operating overpressure	MPa (bar)	0.6 (6.0)		
Rated water volume (when ΔT = 23 K)	l/h	2990	3740	4485
Condensate rate approx. (pH value 3.5 ... 4.0) at 40/30 °C	l/h	12.8	16	19.2
Remaining feed head of the high-efficiency pump with pump group	MPa (bar)	0.024 (0.24)	0.038 (0.38)	0.036 (0.36)
Remaining feed head of the modulating pump with pump group	MPa (bar)	0.042 (0.42)	0.026 (0.26)	0.024 (0.24)
General				
Gas connection on unit	Inches	R 1		
Heating connection on unit	Inches	G 1 1/4		
Gas connection pressure (gas flow pressure) natural gas, G20	kPa (mbar)	2 (20)		
Connection value at 15 °C and 101.3 kPa (1013 mbar) Natural gas H (Hi = 9.5 kWh/m³)	m³/h	8.0	10.1	12.1
Wobbe index (WS) at 0 °C and 101.3 kPa (1013 mbar) Natural gas range H	kWh/m³	12.0 - 16.1		
EE setting, in relation to WS ⁴⁾ Natural gas H	kWh/m³	15.0		
Flue gas mass rate min./max. ³⁾	g/s	6.9/34.4	8.9/43.6	10.6/52.5
Flue gas temperature min./max. ³⁾	°C	40/85		
Approved flue gas connections		C13, C33, C43, C53, C93, B23, B23P, B53, B53P		
Permitted pressure difference in the flue pipe for installation type B23p as a single occupancy max.	Pa (bar)	150 (0.0015)	200 (0.002)	
Permitted pressure difference in the flue pipe for installation type B23p as cascade operation max.	Pa (bar)	50 (0.0005)		
Air/flue gas connection □	mm	110/160		
NOx class		5		
NOx emissions	mg/kWh	< 50		
CO₂ content ³⁾	%	9.0		
Boiler dimensions (H x W x D)	mm	960 x 480 x 602		
Weight excl. pump group	kg	68	86	90
Electrical connection	V/Hz	230/50		
Built-in fuse		4 A, slow-blow		
Min. electrical power consumption excl. pump	W	25	18	18
Max. electrical power consumption excl. pump	W	122	160	160
Level of protection		IP X4D		
Test symbol/registration no.		CE- 0085CM0415		

18.1 ecoTEC plus Technical Data

- 1) In relation to the heating value Hi and pure heating mode
- 2) Determined according to DIN 4702 Part 8
- 3) Calculated value for dimensioning of the chimney in accordance with DIN EN 13384-1

- 4) For operation with a gas quality other than the factory set EE setting, deviations from the specified nominal heat output or set heat output may occur

19 Glossary

Burner anti-cycling time

The burner is electronically locked for a specific time after each time it is switched off ("restart interlock") to avoid frequent switching on and off of the burner (energy losses) and to extend the working life of the boiler. The burner anti-cycling time is only activated for the heating mode. Hot water handling is not affected if burner anti-cycling time is running.

Calorific value

Unlike the heating value, the calorific value of a fuel describes the total useable heat during combustion, based on the quantity of fuel used, including the condensation heat in the steam.

The energy contained in steam can also be used if the steam liquefies on cooling.

Condensing technology

Technology which uses the calorific value of the fuel that is used. To do this, the flue gases are cooled below the dew point of the flue gas so that the steam they contain condenses. The condensation heat that this releases can also be used.

In particular, the flue gas losses are greatly reduced. The losses from conduction of heat and radiation are also reduced by the lower system temperatures. The entire heating installation should therefore be designed for low system temperatures (flow/return temperature) for the effective use of the calorific value. The level of efficiency attainable for boilers is always given based on the heating value of the gas. Due to the additional condensation heat used, the calculated values can exceed 100 %.

Dew point

The dew point is the temperature at which steam turns to liquid (condensation). The steam in the flue gas from the boiler contains thermal energy, which can be released by condensation. In gas-fired and oil-fired boilers using calorific values, the flue gases are cooled so that the steam condenses and the heat that it contains can be output into the heating system.

Digital information and analysis system (DIA)

The Vaillant ecoTEC plus boiler is fitted with a digital information and analysis system (DIA). If additional settings are required, which have not been configured using the installation assistant, you can view and modify further parameters using the DIA.

eBUS

eBUS is an abbreviation for energyBUS. The eBUS is a special bus used in heating technology, which assists the communication between intelligent components in the heating technology. In a Vaillant system, up to eight different heat generators can be connected via the eBUS. The eBUS communications protocol simplifies the control-related linking

of different system components within a heating installation. It provides particular flexibility for retro-fitting and expanding the system. This simplifies the installation of boiler cascades or the subsequent addition of components such as solar hot water generation. The eBUS provides extended possibilities for connecting controllers and also for connecting to the vrnetDIALOG Internet communications system for remote servicing and diagnosis.

Flue pipe

A flue pipe is a line system with two separate flow channels. The flue gas is routed into separate chambers at the same time as the required combustion air is pumped to the boiler. The flue pipe can be designed as a concentric or adjacent double flue gas pipe (the flue gas channel is sealed from the air channel). Floor-standing boilers and gas-fired wall-hung boilers can be operated as room-sealed through the flue pipe. As a result, boilers can be installed in new buildings that, due to their airtight construction, do not offer sufficient combustion air for open-flued heat generators.

Gas-air mixture unit

The gas-air mixture unit is an assembly in Vaillant condensing units, which consists of the following four main components in the ecoTEC plus: Speed-regulated fan, gas valve, gas supply (mixture pipe) to the premix burner and premix burner

Multi-functional module

The multi-functional module is an accessory that controls additional functions or components in combination with Vaillant boilers with eBUS electronics. It also allows you to select and control 2 in 7 functions, e.g. circulation pump, external heating pump, external solenoid valve or response from the flue non-return flap.

vrnetDIALOG Internet communication system

Using the vrnetDIALOG Internet communication system for remote setting and monitoring, you can set the heating installation at the customer's home from your home PC. So no journey is required. vrnetDIALOG can also forward fault messages by fax, E-mail or SMS to you and thereby help with diagnostics. You can therefore prepare your work in advance and, if required, arrive at the customer's home with the right spare parts for maintenance or repair.

20 Appendix

Commissioning checklist

Please affix the label from the rear cover of the control box over this area.

COMMISSIONING CHECKLIST GAS BOILER SYSTEM

This Commissioning Checklist is to be completed in full by the competent person who commissioned the boiler as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions will invalidate the warranty but does not affect statutory rights.

Customer Name _____ Telephone Number _____
Address _____
Commissioned by (print name) _____ Engineer ID Number _____
Company Name _____ Telephone Number _____
Company Address _____
Commissioning Date _____

To be completed by the customer on receipt of a Building Regulations Compliance Certificate *:

Building Regulations Notification Number (if applicable) _____

CONTROLS Tick the appropriate boxes

Time and Temperature Control to Heating	Room Thermostat and Programmer/Timer <input type="checkbox"/>	Programmable Room Thermostat <input type="checkbox"/>	Load/Weather Compensation <input type="checkbox"/>	Optimum Start Control <input type="checkbox"/>
Time and Temperature Control to Hot Water	Cylinder Thermostat and Programmer/Timer <input type="checkbox"/>		Combination Boiler <input type="checkbox"/>	
Heating Zone Valves	Fitted <input type="checkbox"/>		Not Required <input type="checkbox"/>	
Hot Water Zone Valves	Fitted <input type="checkbox"/>		Not Required <input type="checkbox"/>	
Thermostatic Radiator Valves	Fitted <input type="checkbox"/>		Not Required <input type="checkbox"/>	
Automatic Bypass to System	Fitted <input type="checkbox"/>		Not Required <input type="checkbox"/>	
Boiler Interlock			Provided <input type="checkbox"/>	

ALL SYSTEMS

The system has been flushed and cleaned in accordance with BS7593 and boiler manufacturer's instructions Yes ☐
What system cleaner was used? _____
What inhibitor was used? _____ Quantity litres

CENTRAL HEATING MODE Measure and Record:

Gas Rate	<input type="text"/> m ³ /hr	OR	<input type="text"/> ft ³ /hr
Burner Operating Pressure (if applicable)	<input type="text"/> mbar	OR	Gas Inlet Pressure <input type="text"/> mbar
Central Heating Flow Temperature	<input type="text"/> °C		
Central Heating Return Temperature	<input type="text"/> °C		

COMBINATION BOILERS ONLY

Is the installation in a hard water area (above 200ppm)? Yes ☐ No ☐
If yes, has a water scale reducer been fitted? Yes ☐ No ☐
What type of scale reducer has been fitted? _____

DOMESTIC HOT WATER MODE Measure and Record:

Gas Rate	<input type="text"/> m ³ /hr	OR	<input type="text"/> ft ³ /hr
Burner Operating Pressure (at maximum rate)	<input type="text"/> mbar	OR	Gas Inlet Pressure (at maximum rate) <input type="text"/> mbar
Cold Water Inlet Temperature	<input type="text"/> °C		
Hot water has been checked at all outlets	Yes <input type="checkbox"/>	Temperature	<input type="text"/> °C
Water Flow Rate	<input type="text"/> l/min		

CONDENSING BOILERS ONLY

The condensate drain has been installed in accordance with the manufacturer's instructions and/or BS5546/BS6798 Yes ☐

ALL INSTALLATIONS

If required by the manufacturer, record the following CO₂ % OR CO ppm OR CO/CO₂ Ratio
The heating and hot water system complies with the appropriate Building Regulations Yes ☐
The boiler and associated products have been installed and commissioned in accordance with the manufacturer's instructions Yes ☐
The operation of the boiler and system controls have been demonstrated to and understood by the customer Yes ☐
The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer Yes ☐

Commissioning Engineer's Signature _____

Customer's Signature _____

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

©Heating and Hotwater Industry Council (HHIC)

SERVICE INTERVAL RECORD

It is recommended that your heating system is serviced regularly
and that you complete the appropriate Service Interval Record Below .

Service Provider. Before completing the appropriate Service Interval Record below, please ensure you have carried out the service as described in the boiler manufacturer's instructions. Always use the manufacturer's specified spare part when replacing all controls.

SERVICE 1 DateEnergy Efficiency Checklist completed? Yes ☐ No ☐Engineer Name Company Name Telephone Number Engineer ID Number Comments Signature **SERVICE 2** DateEnergy Efficiency Checklist completed? Yes ☐ No ☐Engineer Name Company Name Telephone Number Engineer ID Number Comments Signature **SERVICE 3** DateEnergy Efficiency Checklist completed? Yes ☐ No ☐Engineer Name Company Name Telephone Number Engineer ID Number Comments Signature **SERVICE 4** DateEnergy Efficiency Checklist completed? Yes ☐ No ☐Engineer Name Company Name Telephone Number Engineer ID Number Comments Signature **SERVICE 5** DateEnergy Efficiency Checklist completed? Yes ☐ No ☐Engineer Name Company Name Telephone Number Engineer ID Number Comments Signature **SERVICE 6** DateEnergy Efficiency Checklist completed? Yes ☐ No ☐Engineer Name Company Name Telephone Number Engineer ID Number Comments Signature **SERVICE 7** DateEnergy Efficiency Checklist completed? Yes ☐ No ☐Engineer Name Company Name Telephone Number Engineer ID Number Comments Signature **SERVICE 8** DateEnergy Efficiency Checklist completed? Yes ☐ No ☐Engineer Name Company Name Telephone Number Engineer ID Number Comments Signature **SERVICE 9** DateEnergy Efficiency Checklist completed? Yes ☐ No ☐Engineer Name Company Name Telephone Number Engineer ID Number Comments Signature **SERVICE 10** DateEnergy Efficiency Checklist completed? Yes ☐ No ☐Engineer Name Company Name Telephone Number Engineer ID Number Comments Signature

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